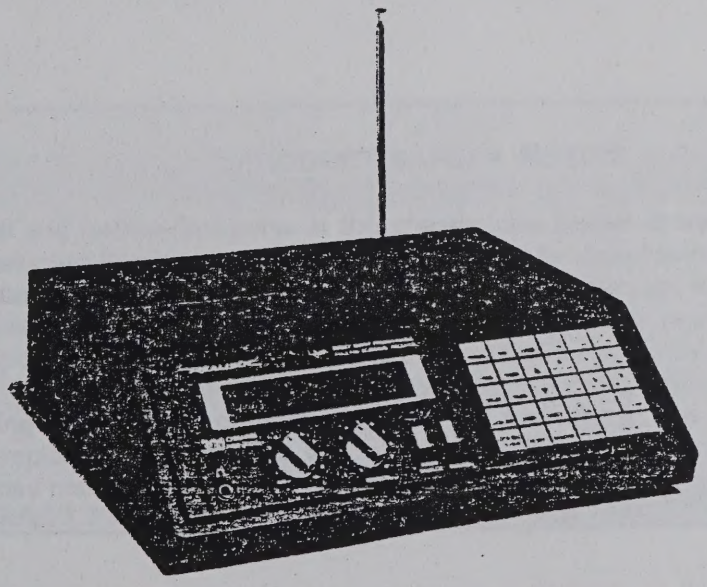
REALISTIC®

# Service Manual

20-119/9119

## PRO-2004
## PROGRAMMABLE SCANNER
## GENERAL COVERAGE
## AM/FM MONITOR RECEIVER

## Catalog Number: 20-119/9119



CUSTOM MANUFACTURED FOR RADIO SHACK, A DIVISION OF TANDY CORPORATION

# CONTENTS



**PRODUCT SAFETY NOTICE**

Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by a ⚠ in the schematic diagram and the parts list.

Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.

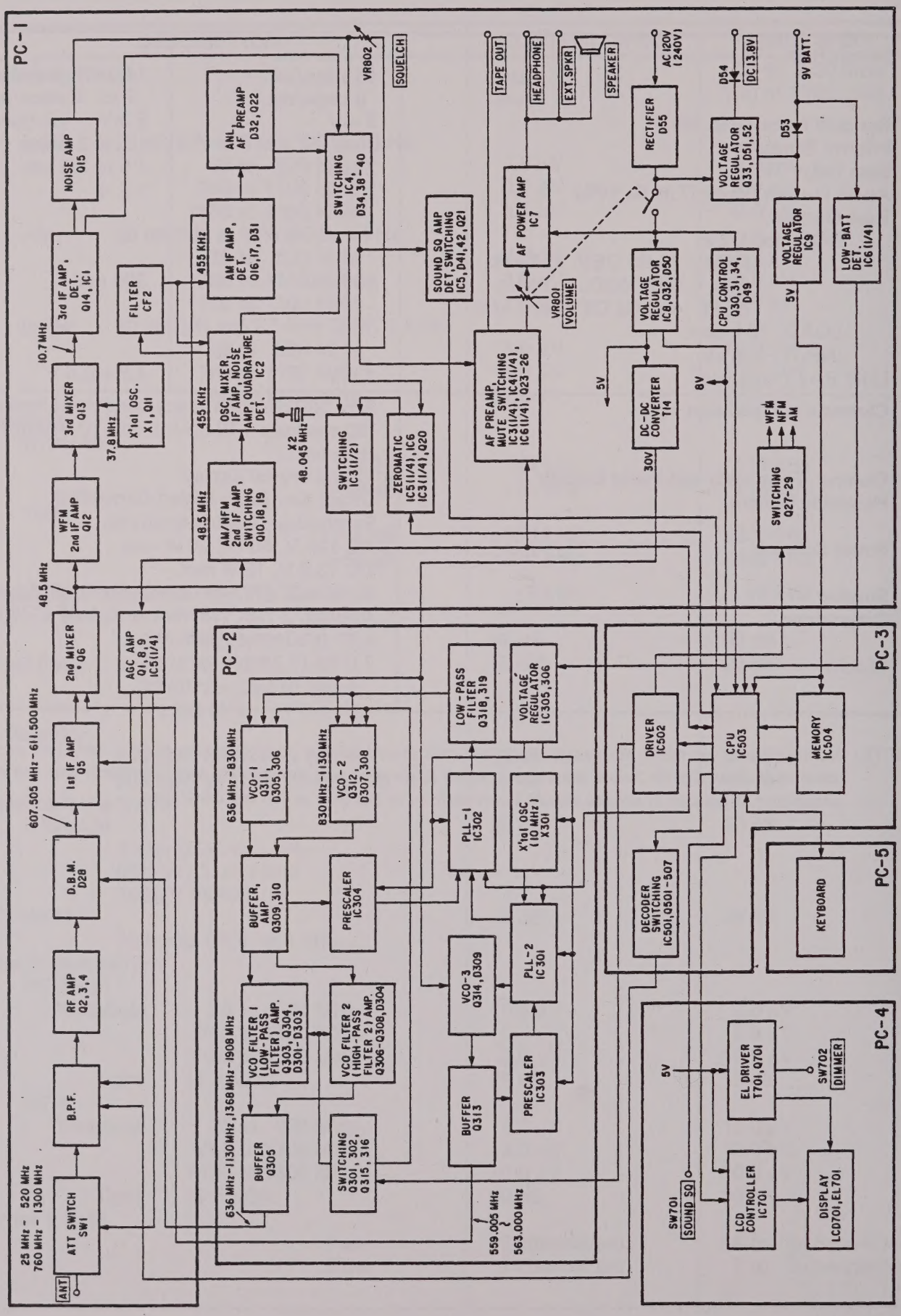
# SPECIFICATIONS

| DESCRIPTION | NOMINAL SPEC. | LIMIT SPEC. |
|---|---|---|
| Frequency Range | | 25 to 520 MHz<br>760 to 1300 MHz |
| Sensitivity | | |
| NFM: 20 dB S/N at 3 kHz DEV. 1 kHz | | |
| 25 to 520 MHz | 0.5 μV | 2.0 μV |
| 760 to 1100 MHz | 0.5 μV | 2.0 μV |
| 1100 to 1300 MHz | 3.0 μV | 10.0 μV |
| AM: 20 dB S/N at 60% MOD. 1 kHz | | |
| 25 to 520 MHz | 2.0 μV | 5.0 μV |
| 760 to 1100 MHz | 2.0 μV | 5.0 μV |
| 1100 to 1300 MHz | 3.0 μV | 10.0 μV |
| WFM: 30 dB S/N at 22.5 kHz DEV. 1 kHz | | |
| 25 to 520 MHz | 3.0 μV | 10.0 μV |
| 760 to 1100 MHz | 3.0 μV | 10.0 μV |
| 1100 to 1300 MHz | 10.0 μV | 20.0 μV |
| Selectivity | | |
| NFM/AM | | |
| −6 dB | ±9 kHz | ±12 kHz |
| −50 dB | ±15 kHz | ±18 kHz |
| WFM | | |
| −6 dB | ±150 kHz | ±200 kHz |
| −50 dB | ±300 kHz | ±400 kHz |
| Modulation Acceptance: EIA RS-204-A | ±8 kHz | ±5 kHz |
| Spurious Rejection | | |
| at 328 MHz (NFM) | 40 dB | 35 dB |
| Image Ratio at 70 MHz (NFM) | 35 dB | 25 dB |
| 70 MHz + (2x610 MHz) = 1290 MHz | | |
| IF Rejection | | |
| 610 MHz at 70 MHz (NFM) | 60 dB | 40 dB |
| 608 MHz at 1000 MHz (NFM) | 60 dB | 40 dB |
| Signal to Noise Ratio | | |
| NFM/AM | 40 dB | 30 dB |
| 3 kHz DEV. at 1 kHz<br>60% MOD. at 1 kHz<br>100 μV INPUT | | |
| WFM | 45 dB | 35 dB |
| 22.5 kHz DEV. at 1 kHz | | |
| Squelch Sensitivity | | |
| NFM/AM | | |
| Threshold 25 to 520 MHz | 0.5 μV | 2.0 μV |
| 760 to 1100 MHz | 0.5 μV | 2.0 μV |
| 1100 to 1300 MHz | 3.0 μV | 10.0 μV |
| Tight (S + N/N) | 25 dB | 15 dB |
| WFM | | |
| Threshold 25 to 520 MHz | 3.0 μV | 10.0 μV |
| 760 to 1100 MHz | 3.0 μV | 10.0 μV |
| 1100 to 1300 MHz | 10.0 μV | 20.0 μV |
| Tight (S + N/N) | 40 dB | 30 dB |
| Scanning Rate | | |
| Fast | 16 channel/sec. | 14 to 18 channel/sec. |
| Slow | 8 channel/sec. | 7 to 9 channel/sec. |

| | | |
|---|---|---|
| Search Rate | | |
| Fast | 16 steps/sec. | 14 to 18 steps/sec. |
| Slow | 8 steps/sec. | 7 to 9 steps/sec. |
| Residual Noise (Vol. Min.) | 3 mV | 5 mV |
| Priority Sampling | 2 sec. | 1.5 to 2.5 sec. |
| Scan Delay Time | 2 sec. | 1.5 to 2.5 sec. |
| Audio Output Power (T.H.D. 10%) | 1.8 W | 1.3 W |
| Tape Output | | |
| MOD. and DEV: | | |
| NFM 3 kHz DEV. at 1 kHz | | |
| AM 60% MOD. at 1 kHz | 600 mV | 300 mV |
| WFM 45 kHz DEV. at 1 kHz | | |
| LOAD: 10 k ohm | | |
| INPUT: 100 $\mu$V | | |
| LOW BATT Indicator | 4.5 V | 4.5 ± 0.5 V |
| Channels of Operation | Any 300 channels in any band combination (30 channels x 10 banks), and 10 Monitor channels. | |
| Channel, Frequency and Mode Display | Liquid crystal display | |
| Receiving System | Direct Key Entry Digital Controlled Synthesizer, Superheterodyne. | |
| Power Source | AC 120 V, 60 Hz, 20 W max.<br>DC 13.8 V, 12 W max. | |
| Speaker | Built-in 3" (77 mm) 8 ohm Dynamic Speaker | |
| Dimensions | Approx. 2-7/8" (75 mm) x 10-1/4" (275 mm) x 9" (230 mm) HWD | |
| Weight | 7.0 lbs (3.2 kg.) | |

NOTE: *Nominal Specs represent the design specs: all units should be able to approximate these — some will exceed and some may drop slightly below these specs. Limit Specs represent the absolute worst condition that still might be considered acceptable; in no case should a unit perform to less than within any Limit Spec.*

# BLOCK DIAGRAM



# PRINCIPLES OF OPERATION

The PRO-2004 is a Phase Locked Loop (PLL) synthesized VHF/UHF, AM/FM Receiver controlled by a Central Processing Unit (CPU) via the keyboard.

Receiving mode and search step are initially set to correspond with the frequencies entered. When a frequency within FM broadcast band is keyed in, receiving mode is set to Wideband FM (WFM). When a frequency in Action radio band, Police, Fire, Ambulance, Ham radio etc. is keyed in, the mode is set to Narrowband FM (NFM), and when a frequency in Aircraft and CB band is keyed in, it sets to AM mode. Also the mode and step can be changed by [MODE], [STEP] Keys.

The CPU (IC-503) controls receiving frequency range, frequency determination, scanning speed, delay time, etc. The CPU is able to do only the assigned functions, and no modification of the CPU is feasible.

The following paragraphs explain the operation of the circuit in terms of the functional blocks:

RF input circuit comprises 10 dB attenuator and Bandpass filter. A signal generated by VCO-1 or VCO-2 is applied to Double balanced mixer (D.B.M.) via Low-pass or High-pass filter and mixed with the RF signal. The D.B.M. is employed to facilitates 25 MHz to 1300 MHz mixing.

The 1st IF (Q5) is 607.505 MHz to 611.500 MHz, and the signal is mixed with VCO-3 frequency at the 2nd mixer (Q6) to produce 48.5 MHz signal, which is applied to WFM IF (Q12) or AM/NFM IF (Q10, Q18, Q19). Corresponding with input from the keyboard, CPU determines which of VCO-1 or VCO-2, WFM IF, AM/NFM, AM IF, Data of PLL circuit to be functioned, and outputs the necessary data.

A signal entered to AM/NFM IF is mixed with X'tal oscillation frequency 48.045 MHz at the 3rd mixer (IC-2) and converted to 455 kHz signal. A signal entered to WFM IF is mixed with X'tal oscillation frequency 37.8 MHz at the 3rd mixer (Q13) and converted to 10.7 MHz signal. The signals are further amplified and detected to AF signal.

AF signals of WFM, AM, NFM are CPU controlled and applied to AF Power Amplifier (IC-7) via switching circuit. Squelch signal is comprised of noise product from WFM/NFM detector output, and amplified by IC-2 to switching signal, which controls AF mute and CPU.

Any unstable supply voltage to the CPU can produce CPU malfunctions, such as wrong data processing, wrong data transfer, etc. To overcome this C512 and R501 "initialize" the CPU. Initialization is done when RESTART switch is pushed. Figure A shows initializing waveform.

CX501 (7.37 MHz) is a clock which is used for CPU control. Figure B shows 1/4 divided waveform at Pin 31 of IC-503.

CPU output data display frequency, function, etc. on LCD. LCD is back lighted with Electro Luminescence, which works from 70 V rms, 300 Hz A.C.

Power supply comprises D.C 30 V, 8 V and two 5 V lines.

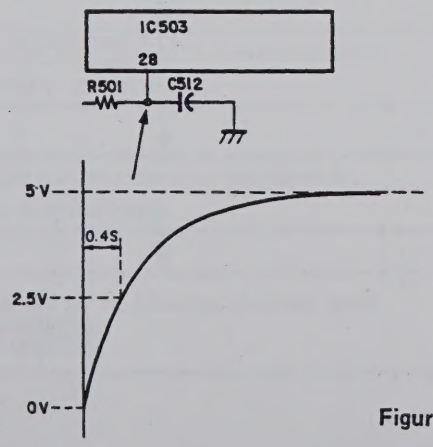



Figure A

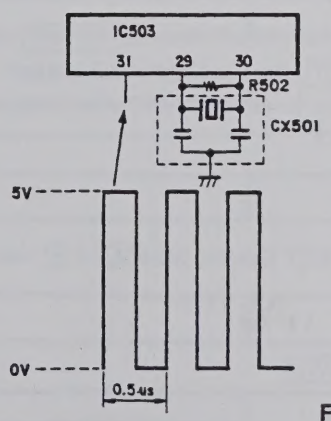
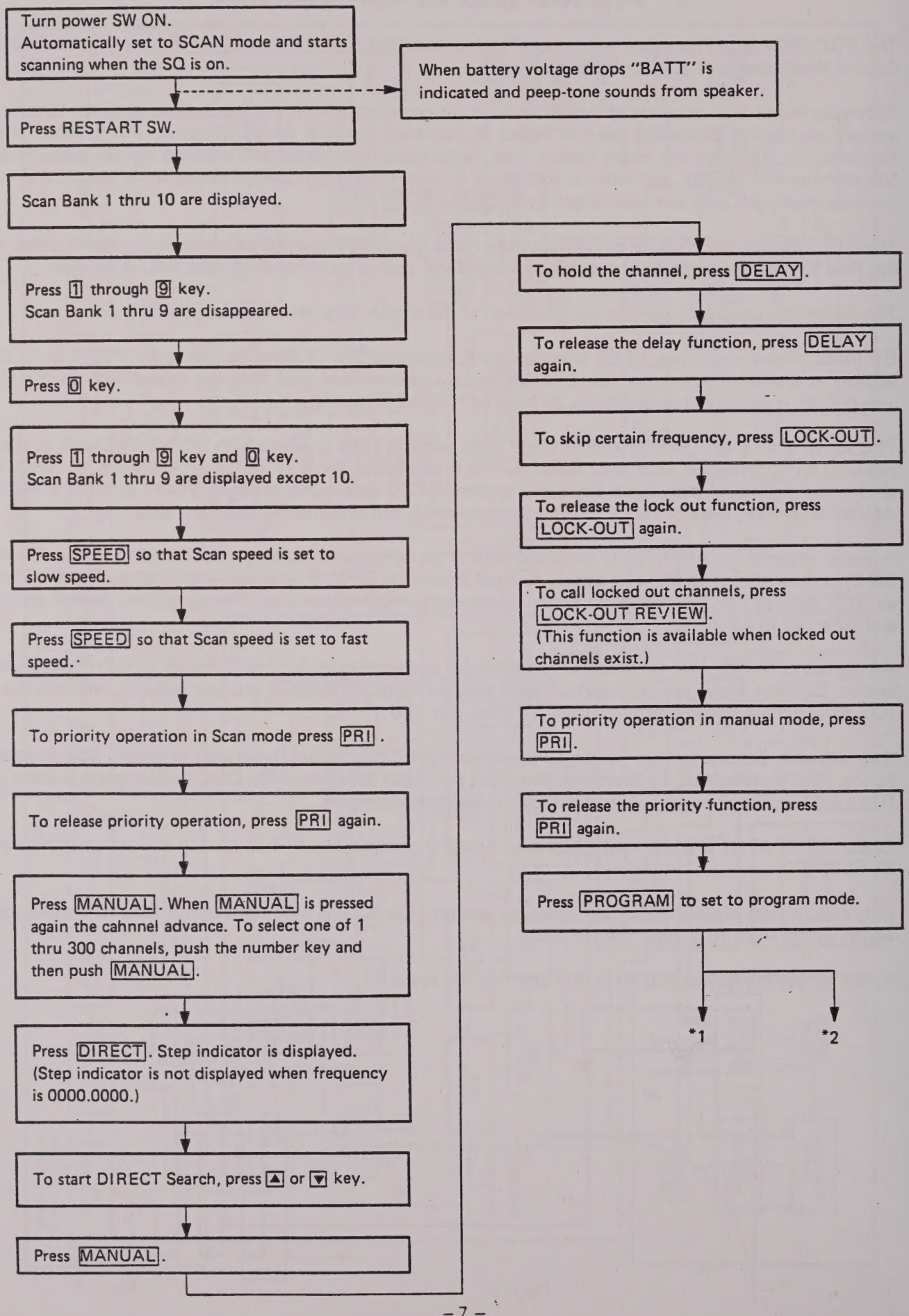



Figure B

# GENERAL OPERATION OUTLINE



*1

Key in the desired frequency in each channel as follows:

Key in the desired frequency with numeral keys.

Press [ENTER] to memorize the frequency.
If wrong frequency (out of the band) is entered, "ERROR" is displayed.
Press [CLEAR] and then enter the correct frequency.

Press [PROGRAM].
Advance to next channel.
Key in the frequency and press [ENTER], repeat it to memorize frequencies one by one.

Press [PRI] so that priority channel is appeared.

To revert to the previous channel, press [PRI] again.

Press numeral keys (1 thru 300) and then press [PRI].
Priority channel is set to entered new channel.

To call monitor channels, press [MONITOR].

Press [MONITOR] so that next monitor channel is appeared.

To call the monitor channels directly, press numeral keys.

To revert to the previous channel, press [PROGRAM].

*2

Key in search frequency as follows.

Press [LIMIT] (or numeral key and [LIMIT]) and key in lower frequency with numeral keys.

Press [ENTER].

Press [LIMIT] and key in upper frequency.

Press [ENTER].

To change mode, press [MODE].
The mode changes in the order of AM — NFM — WFM.

To change step, press [STEP].
The step changes 5 kHz — 12.5 kHz — 50 kHz.

To return to the initial setting of mode and step, press [RESET].

Press [▲] to search from lower frequency. Press [▼] to search from upper frequency.
(squelch must be on)

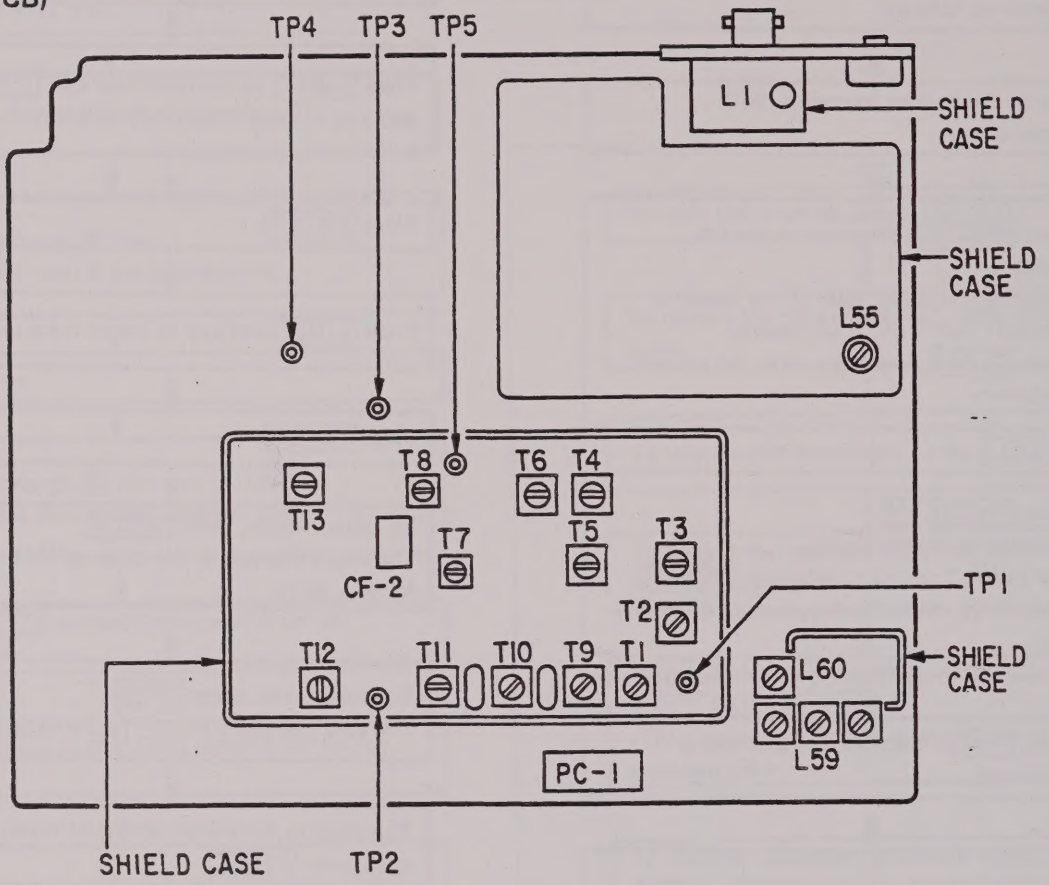
Press [MONITOR] to store the desired frequency (10 monitor channels) in the search mode.

Press [ENTER] to store the desired frequency in the indicated channel.
Search operation starts.

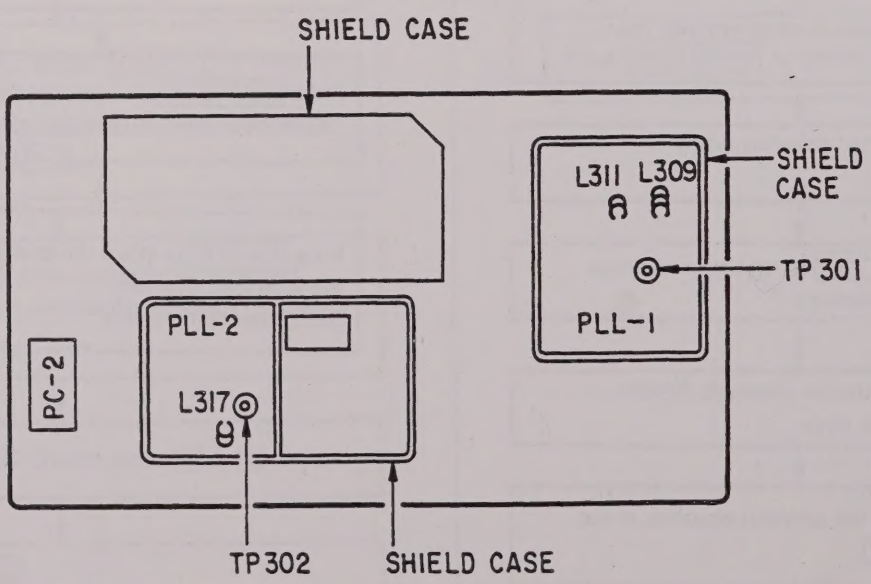
# ALIGNMENT

## ALIGNMENT AND TEST POINTS

(LINEAR PCB)




(PLL PCB)



# ALIGNMENT PREPARATION

**Test equipment required**

1. Oscilloscope
2. AC SSVM
3. DC SSVM
4. 8-ohm dummy load
5. AM. FM. Signal Generator (25 to 1300 MHz)
6. Distortion Meter

**NOTE 1:** *Use non-metallic tuning tools.*
*The test equipment and Receiver should be warmed up at least 30 minutes before proceeding with alignment.*
*Input signal from the Generator should be kept as low as possible and still obtain usable output.*

# ALIGNMENT PROCEDURES

| Step | Control Setting<br>Channel Programming | Test Instrument<br>Connection | Adjust | Remarks |
|---|---|---|---|---|
| 1 | OFF/VOLUME control:<br>ON<br>SQUELCH control:<br>Fully counterclockwise (CCW)<br>Channel Programming:<br>CH1 (220.495 MHz)<br>CH2 (520 MHz) | Connect DC SSVM to TP301<br>(Figure 1) | L309<br>L311 | Alignment of VCO (PLL-1)<br>1) Select Channel 1 (220.495 MHz) and adjust L309 for 20V on the DC SSVM.<br>See Table 1.<br>2) Select Channel 2 (520 MHz) and adjust L311 for 20V on the DC SSVM.<br>See Table 1. |
| 2 | OFF/VOLUME control:<br>ON<br>SQUELCH control:<br>Fully CCW<br>Channel Programming:<br>CH3 (804.5 MHz) | Connect DC SSVM to TP302<br>(Figure 2) | L317 | Alignment of VCO (PLL-2)<br>Adjust L317 for 3V on the DC SSVM.<br>See Table 1. |

**Figure 1**

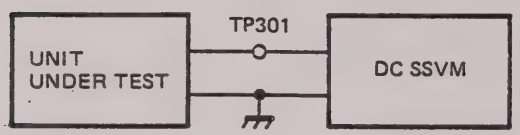



**Figure 2**

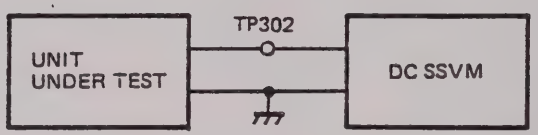
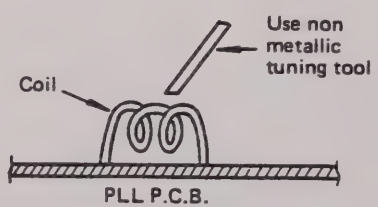
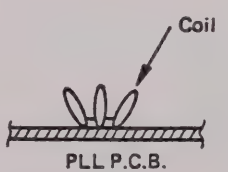
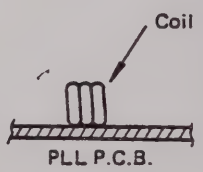
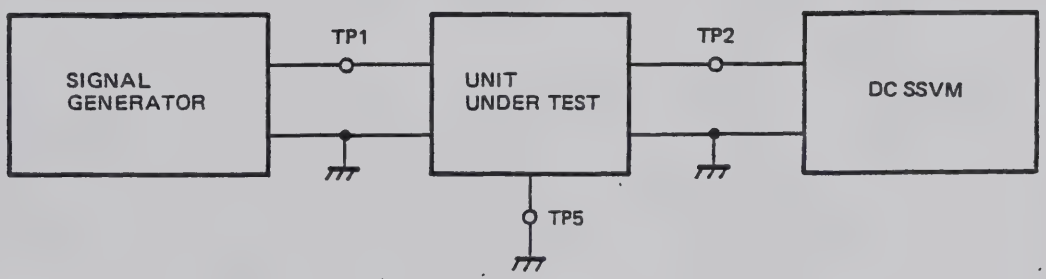



**Table 1**

| Coil L309, L311, L317 | Coil alignment (open) | Coil alignment (close) |
|---|---|---|
| **Figure 3**<br>  <br> | **Figure 4**<br>  <br> | **Figure 5**<br>  <br> |
| NOTE 1: Perform coils interval alignment delicately because it affects frequency much.<br>NOTE 2: Fix the coils with glue after alignment and then repeat the ALIGNMENT PROCEDURES Step 1, Step 2 after checking the fixation and temperature is normal. | * Open the coil as shown above by using non metallic tuning tool when a measuring voltage at TP301 or TP302 is higher than the setting voltage. | * Close the coil as shown above by using non metallic tuning tool when a measuring voltage at TP301 or TP302 is lower than the setting voltage. |

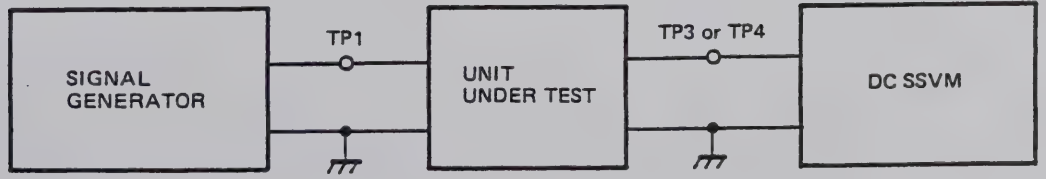
| Step | Control Setting<br>Channel Programming | Test Instrument<br>Connection | Adjust | Remarks |
|---|---|---|---|---|
| 3 | OFF/VOLUME control:<br>ON<br>SQUELCH control:<br>Fully counterclockwise<br>Channel Programming:<br>CH4 (250 MHz -NFM) | Connect Signal Generator to TP1, DC SSVM to TP2 and TP5 to ground.<br>(Figure 6) | T1<br>T9<br>T10<br>T11<br>T12 | Alignment of NFM/AM 2nd IF<br>1) Set the Signal Generator frequency to 48.5 MHz, 0.3 V output (NO MOD).<br>2) Adjust T1, T9, T10, T11 to maximum voltage at TP2.<br>3) Adjust T12 to minimum voltage at TP2, approx. 0.2V on the DC SSVM.<br>NOTE: Perform these adjustment by using the DC SSVM which is able to measure to three decimal places because of the output voltage of TP2 is low. |

**Figure 6**



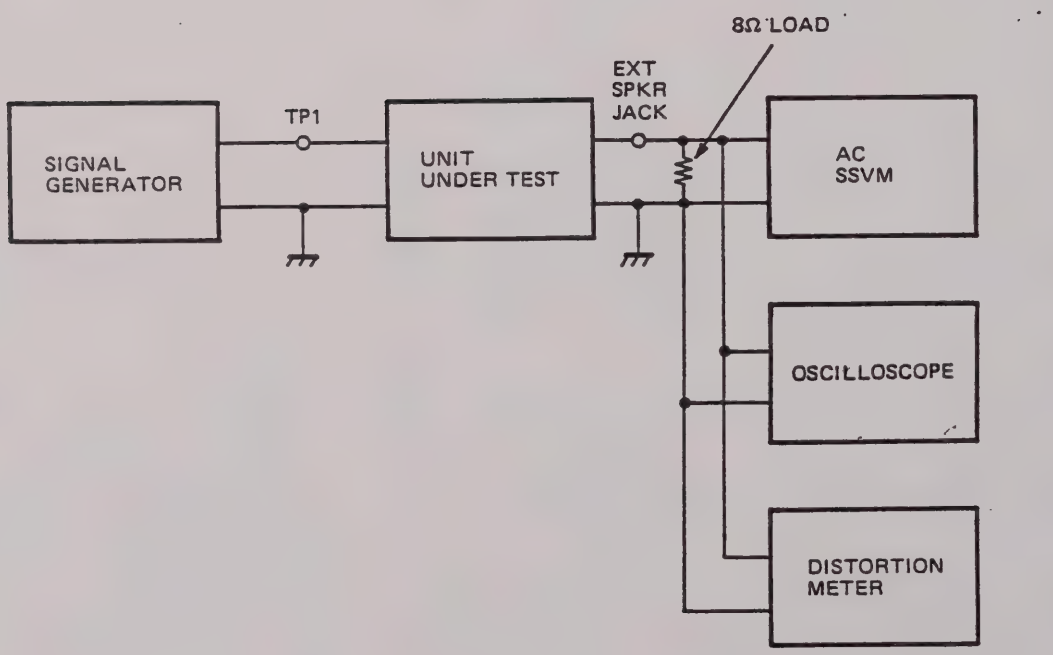

| Step | Control Setting<br>Channel Programming | Test Instrument<br>Connection | Adjust | Remarks |
|---|---|---|---|---|
| 4 | OFF/VOLUME control:<br>ON<br>SQUELCH control:<br>Fully CCW<br>Channel Programming:<br>CH4 (250 MHz - NFM) | Connect Signal Generator to TP1 and DC SSVM to TP4.<br>(Figure 7) | T13 | Alignment of 455 kHz NFM Discriminator coil<br>Set the Signal Generator frequency to 48.5 MHz, 100 μV output (NO MOD) and adjust T13 for 3.8V (±0.1) on the DC SSVM. |
| 5 | OFF/VOLUME control:<br>ON<br>SQUELCH control:<br>Fully CCW<br>Channel Programming:<br>CH5 (98 MHz - WFM) | Connect Signal Generator to TP1 and DC SSVM to TP3.<br>(Figure 7) | T6 | Alignment of 10.7 MHz WFM Discriminator coil<br>Set the Signal Generator frequency to 48.5 MHz, 100 μV output (NO MOD) and adjust T6 for 3.8V (±0.1) on the DC SSVM. |

**Figure 7**



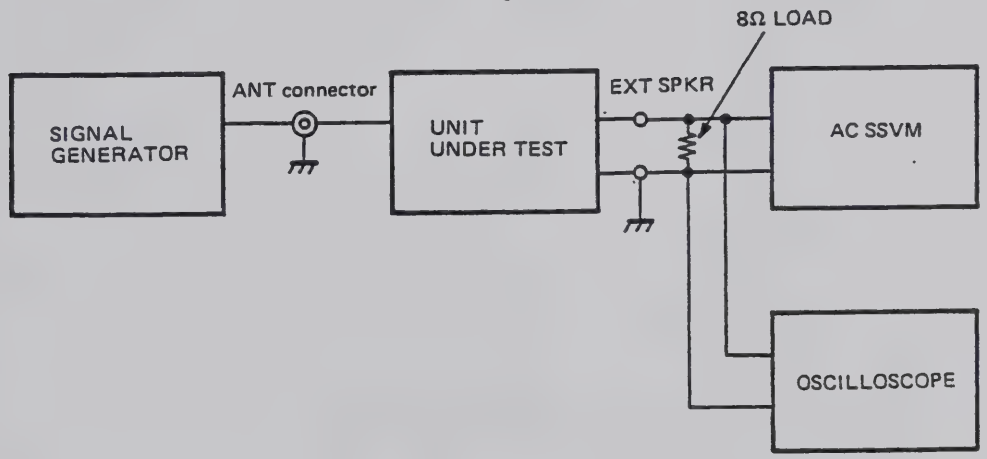
| Step | Control Setting<br>Chanel Programming | Test Instrument<br>Connection | Adjust | Remarks |
|---|---|---|---|---|
| 6 | OFF/VOLUME control:<br>ON<br>SQUELCH control:<br>Fully CCW<br>Channel Programming:<br>CH6 (120 MHz - AM) | Connect Signal Generator to TP1 and Oscilloscope, AC SSVM, Distortion Meter, 8Ω Load to EXT SPKR JACK.<br>(Figure 8) | T7 | Alignment of 455 kHz IF coil<br>1) Set the Signal Generator frequency to 48.5 MHz, AM: 60% MOD. at 1 kHz and 100 μV output<br>2) Adjust T7 to maximum sensitivity. |
| 7 | Same as step 6 | Same as step 6 | T8 | Alignment of 455 kHz AM DET. coil<br>1) Set the Signal Generator frequency to 48.5 MHz, AM: 60% MOD. at 1 kHz and 100 μV output.<br>2) Adjust T8 to minimum T.H.D. point. |

**Figure 8**



| Step | Control Setting<br>Channel Programming | Test Instrument<br>Connection | Adjust | Remarks |
|---|---|---|---|---|
| 8 | OFF/VOLUME control:<br>ON<br>SQUELCH control:<br>Fully CCW<br>Channel Programming:<br>CH5 (98 MHz - WFM) | Connect Signal Generator to ANT, connector and Oscilloscope, AC SSVM, 8Ω LOAD to EXT SPKR JACK.<br>(Figure 9) | T2<br>T3<br>T4<br>T5 | Alignment of 48.5 MHz and 10.7 MHz WFM IF coils<br>1) Set the Signal Generator frequency to 98 MHz<br>FM: 22.5 kHz DEV. at 1 kHz MOD, output approx. 2 μV.<br>2) Adjust T2, T3 to maximum sensitivity.<br>NOTE: Alignment of T4, T5 are not necessary.<br>When those core are turned, adjust cores so that those tops of cores become as high as those coil case. |

**Figure 9**

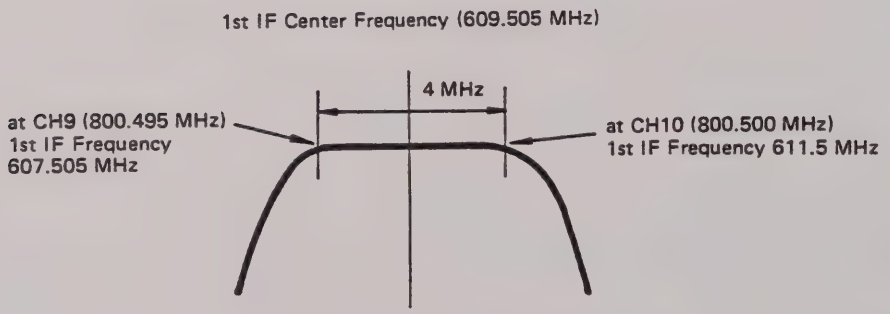



| Step | Control Setting<br>Channel Programming | Test Instrument<br>Connection | Adjust | Remarks |
|---|---|---|---|---|
| 9 | OFF/VOLUME control:<br>ON<br>SQUELCH control:<br>Fully CCW<br>Channel Programming:<br>CH7 (300.495 MHz – NFM) | Same as step 8 | L1<br>L55 | Alignment of IF TRAP coils<br>1) Set the Signal Generator frequency to 609.505 MHz<br>FM: 3 kHz DEV. 1 kHz MOD.<br>Output, approx. 3 mV<br>2) Adjust L1 and L55 to minimum sensitivity. |
| 10 | OFF/VOLUME control:<br>ON<br>SQUELCH control:<br>Fully CCW<br>Channel Programming:<br>CH8 (240.495 MHz – NFM) | Same as step 8 | L60 | Alignment of 512 MHz TRAP coil<br>1) Set the Signal Generator frequency to 337.495 MHz<br>FM: 3 kHz DEV. 1 kHz MOD,<br>Output, approx. 3 mV<br>2) Adjust L60 to minimum sensitivity. |

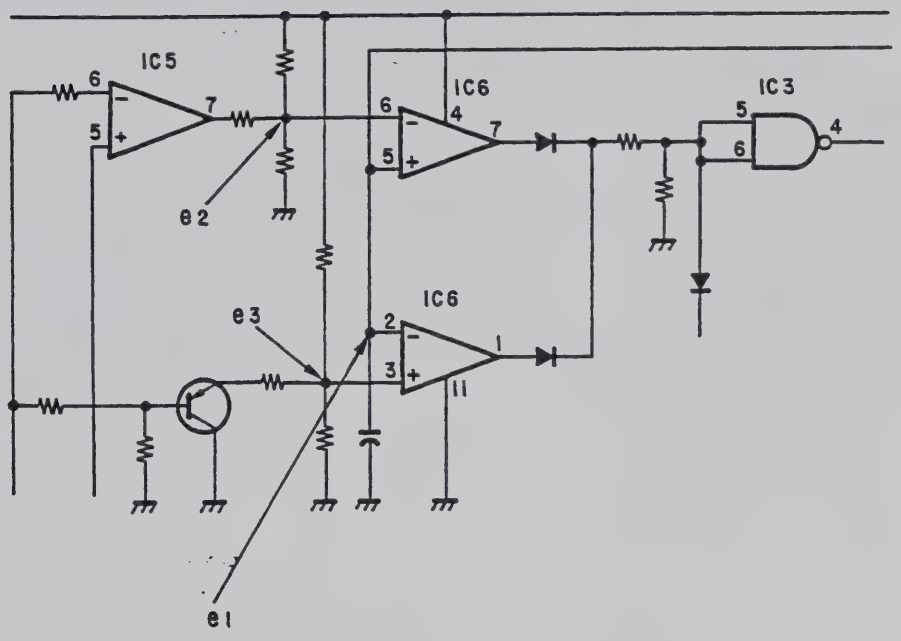
NOTE: Alignment of L59 (GR-H763, B.P.F. coil)
Do not adjust this coil because of L59 is already adjusted at Factory.
When turn the coil core, perform the alignment as below (step 11).
B.P.F. characteristic is Figure 10.

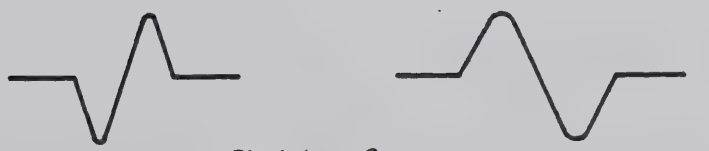
| Step | Control Setting<br>Channel Programming | Test Instrument<br>Connection | Adjust | Remarks |
|---|---|---|---|---|
| 11 | OFF/VOLUME control:<br>ON<br>SQUELCH control:<br>Fully CCW<br>Channel Programming:<br>CH9 (800.495 MHz)<br>CH10 (800.500 MHz) | Same as step 8<br>(Figure 9) | L59 | Alignment 1st IF (611.5 to 607.505 MHz) B.P.F. coil<br>1) Select channel 7 (800.495 MHz) and set the Signal Generator frequency to 800.495 MHz, FM: 3 kHz DEV. at 1 kHz and 1 $\mu$V output.<br>2) Adjust L59 to maximum sensitivity.<br>3) Select channel 8 (800.500 MHz) and set the Signal Generator frequency to 800.500 MHz, FM: 3 kHz DEV. at 1 kHz and 1 $\mu$V output.<br>4) Adjust L59 to maximum sensitivity.<br>NOTE: Align the balance of CH9, CH10 sensitivity to become same. |

**Figure 10**



# ZEROMATIC FUNCTION TEST PROCEDURE



Discriminator Curve

(NFM) (WFM)

(Zeromatic functions when OUTPUT is in "H" level.)

| | 0 < e1 < e3 | e3 < e1 < e2 | e2 < e1 < VCC |
|---|---|---|---|
| OUTPUT (IC3 Pin No. 4) | L | H | L |

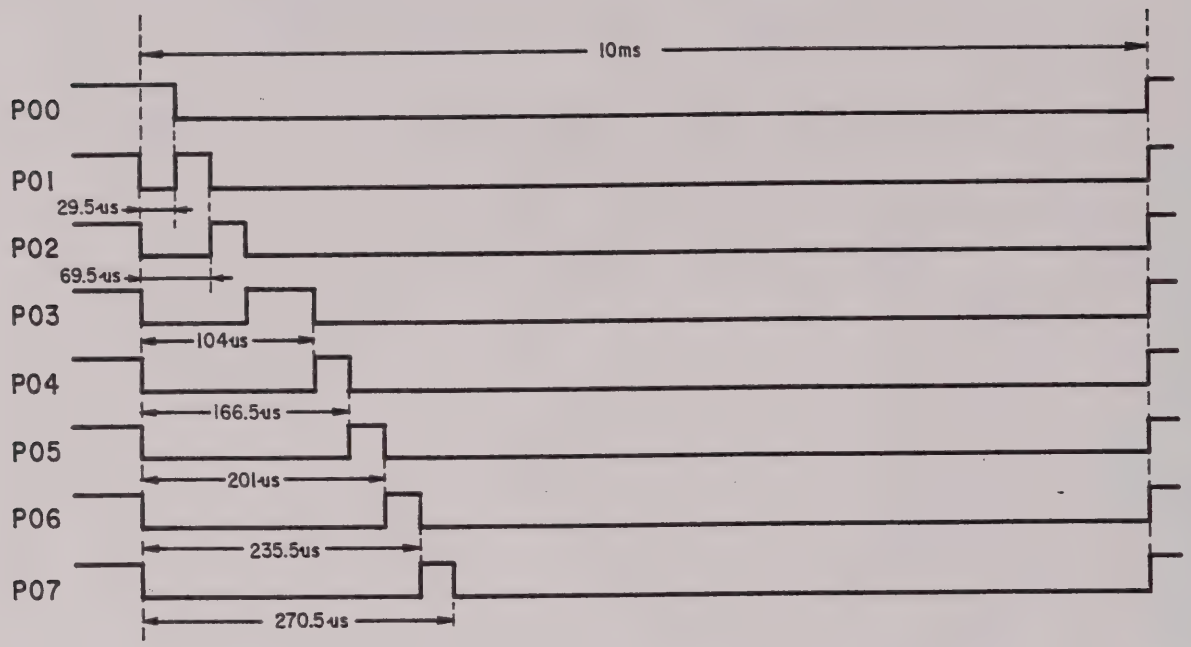
(NFM MOD.)

To adjust e1 voltage, receive signal in Manual mode, and set T13 to obtain 3.8 V (±0.1 V) at TP4. It is convenient to use the National Weather Service signal for the adjustment.

(WFM MOD.)

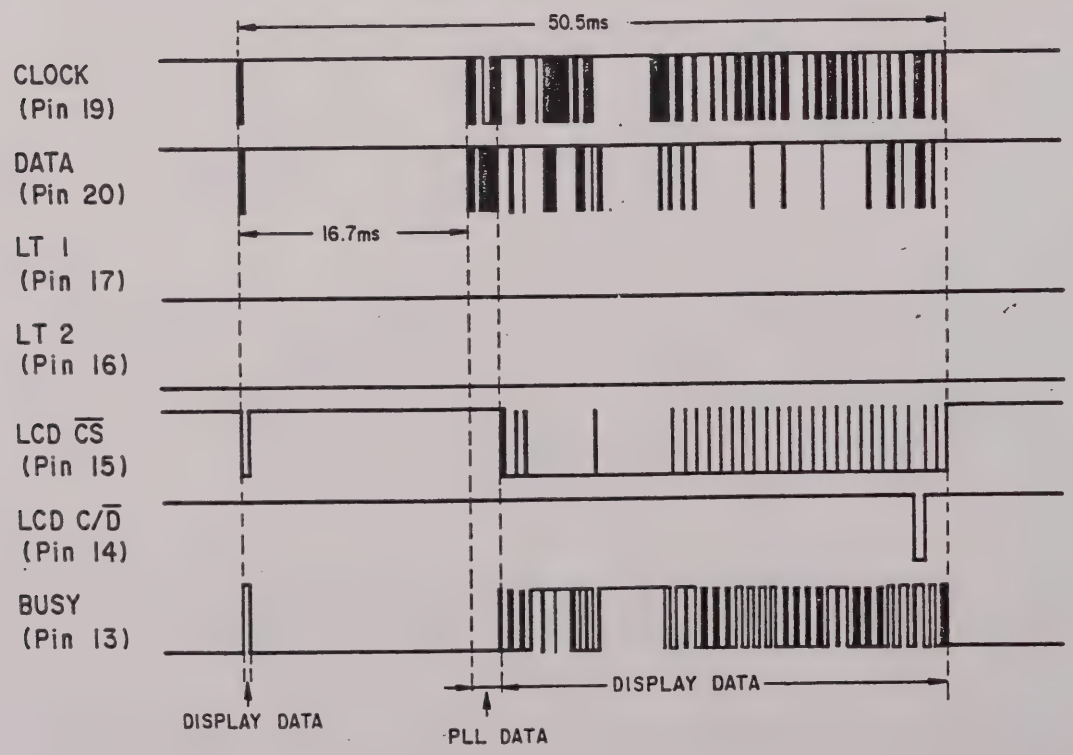
To adjust e1 voltage, receive signal in Manual mode and set T6 to obtain 3.8 V (±0.1 V) at TP3. It is convenient to use the FM. TV. sound signal for the adjustment.

## KEYS ACCESS PULSE OUTPUT (IC-503)

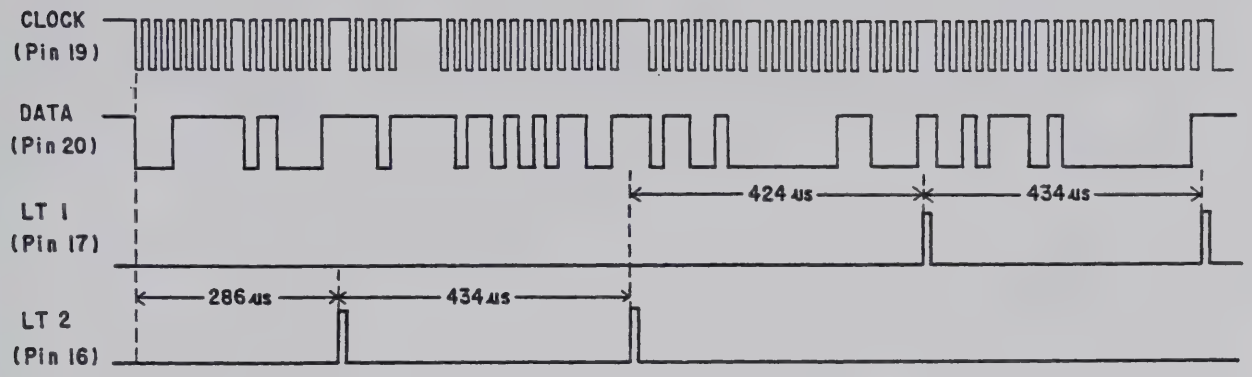



NOTE: Use a signal at P01 of IC-503 as trigger, and then observe the keys access pulse when PROGRAM key is pressed.

## DATA WAVEFORM (IC-503)

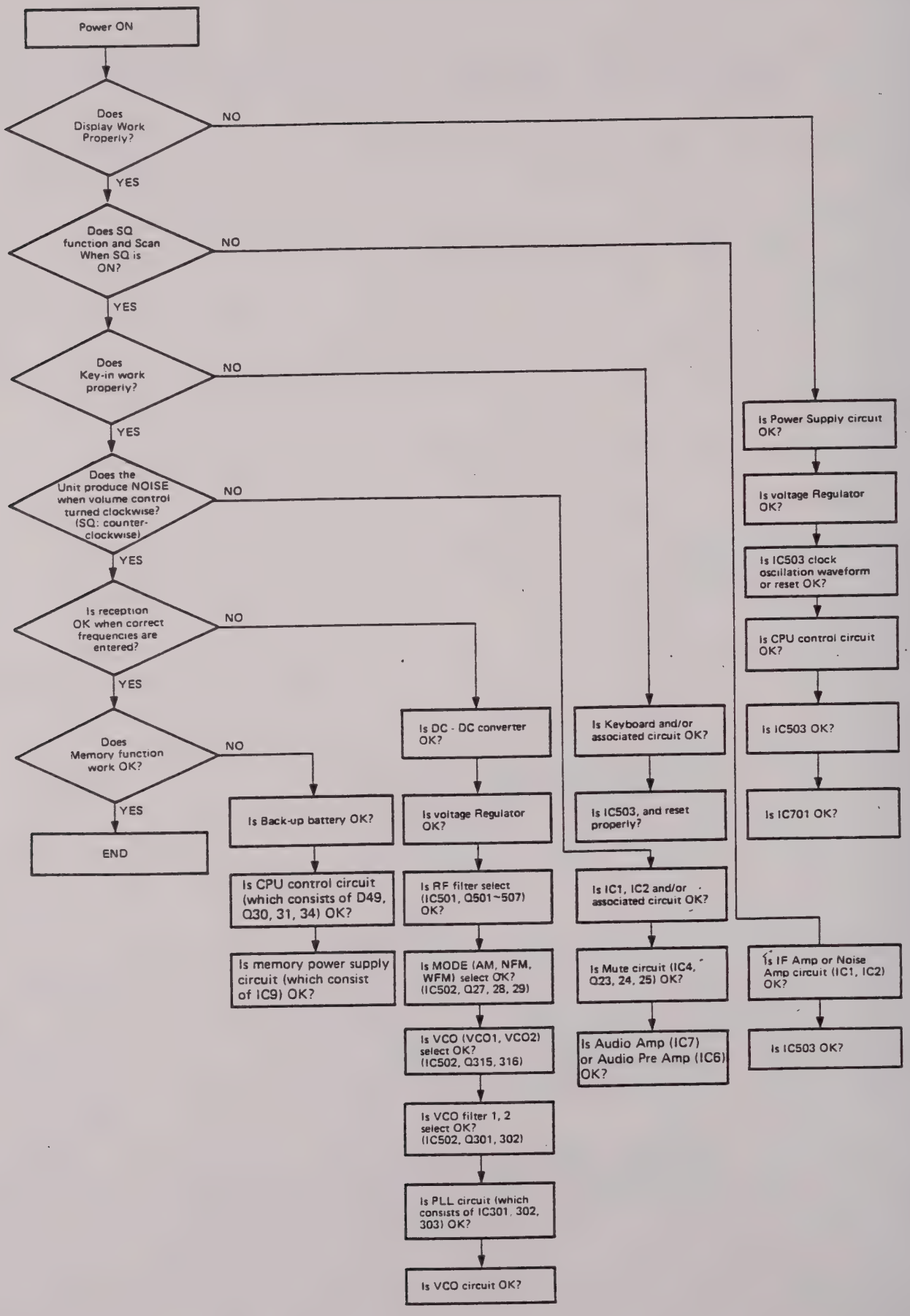


# PLL DATA WAVEFORM

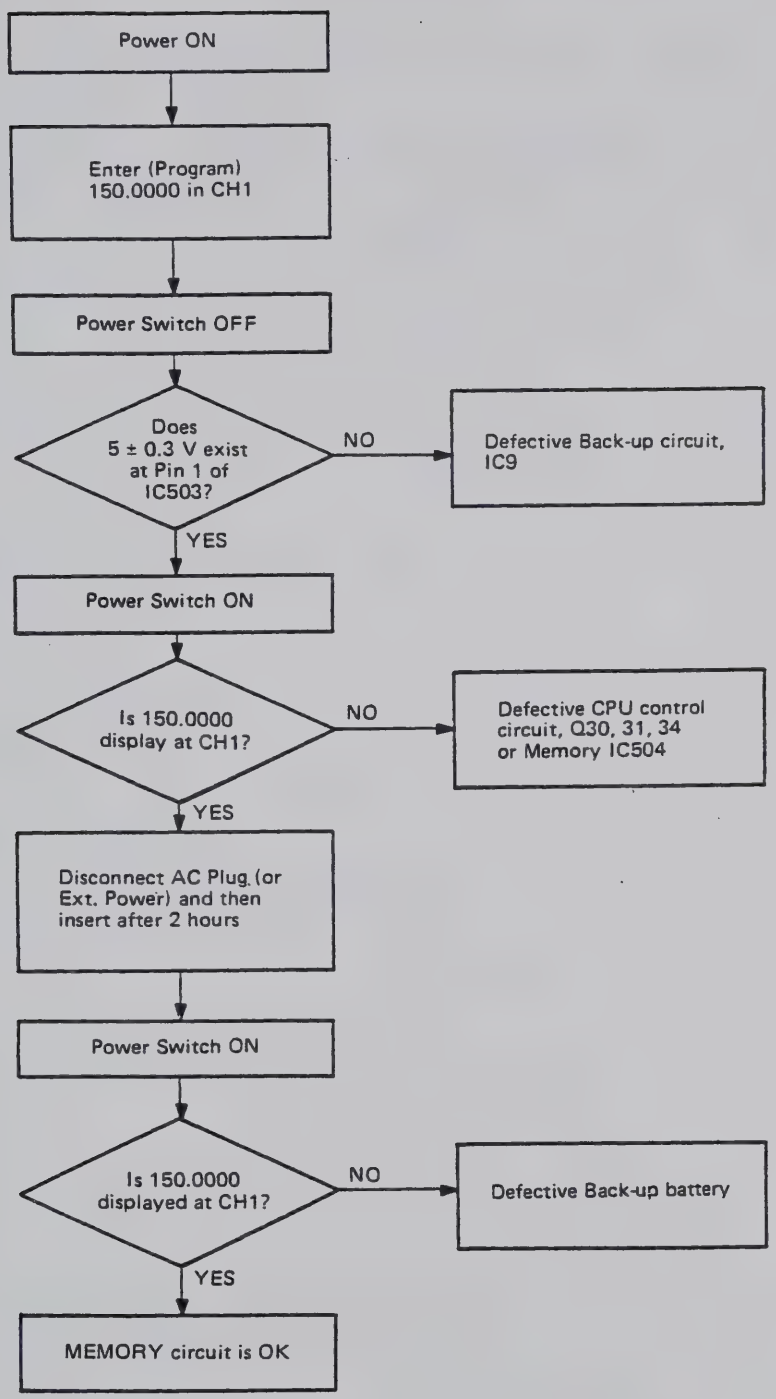



**NOTE:** Data in Program mode when 150.000 MHz entered.

# RECEPTION CHECK



# MEMORY CHECK



# TROUBLESHOOTING

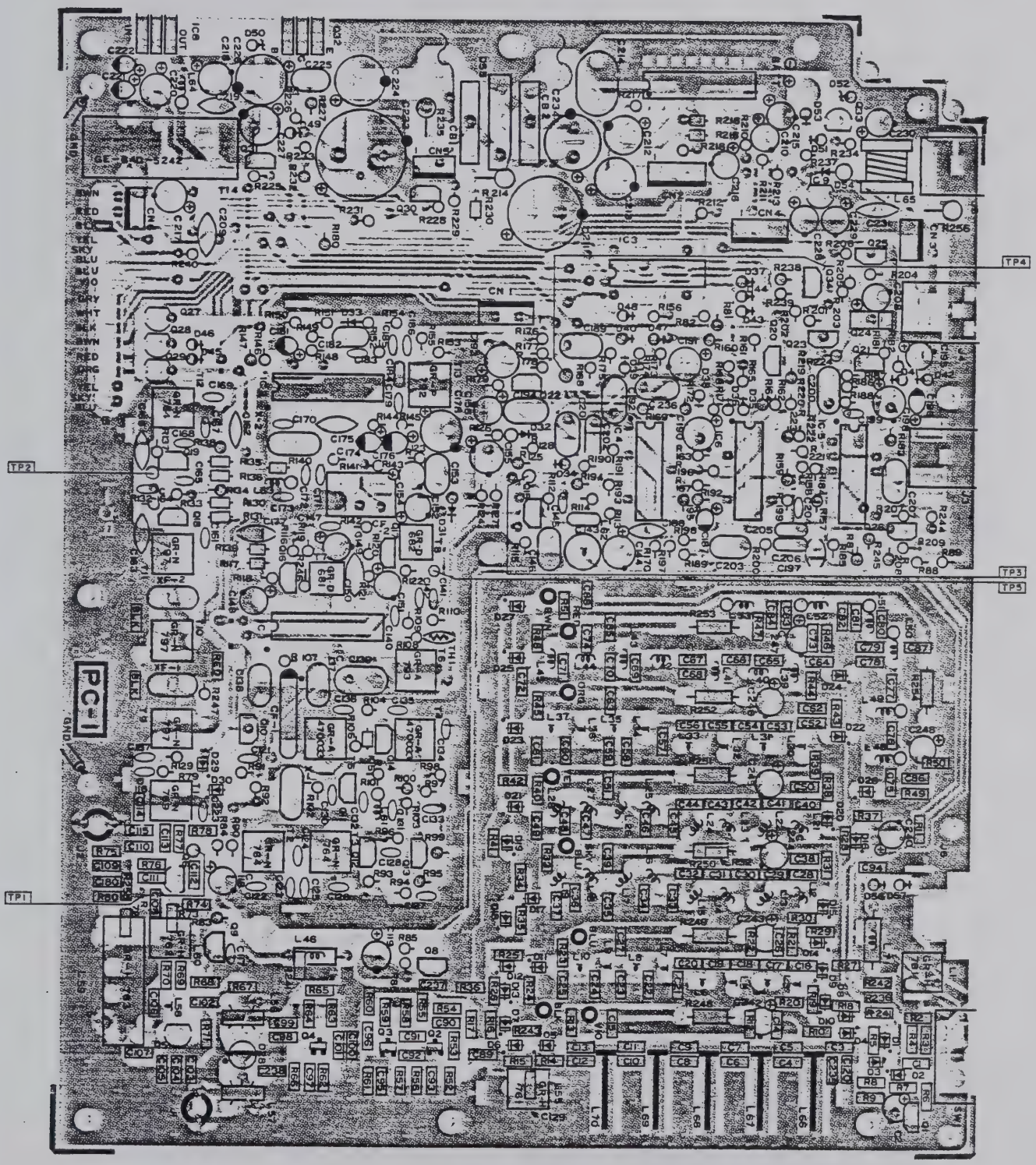
| Symptom | Cause/Remedy |
|---|---|
| 1) Does not display and no sound when POWER is ON.<br>Volume control: MAX.<br>Squelch control: CCW (counter-clockwise) | 1) Defective AC Line Cord: Replace.<br>2) Defective Power transformer T801: Replace.<br>3) Defective Off/Volume control VR801: Replace.<br>4) Defective Rectifier D55: Replace.<br>5) Defective voltage regulator circuit: Replace the defective components.<br>6) Defective CPU control circuit consists of Q30, Q31, Q34, D49: Replace the defective components. |
| 2) Displays but no sound. | 1) Defective speaker or headphone jack: Replace.<br>2) Defective Audio Amp. circuit consists of IC7: Replace the defective components.<br>3) Defective IF Amp. circuit consists of IC1, IC2: Replace the defective components.<br>4) Defective Squelch control circuit consists of IC3, IC4: Replace the defective components.<br>5) Defective AF Pre Amp. circuit consists of IC6: Replace the defective components.<br>6) Defective Audio Mute Switching circuit consists of IC3, IC4 and Q23, Q24, Q25: Replace the defective components.<br>7) Defective Switching circuit consists of IC4, D34, D38, D39 and D40: Replace the defective components. |
| 3) Sounds but no display | 1) IC503 is running "wild": Press RESTART Switch.<br>2) Defective initiate control circuit: Replace the defective components.<br>3) Defective voltage regulator circuit consists of IC9: Replace the defective components.<br>4) Defective LCD: Replace.<br>5) Defective CPU circuit consists of IC503: Replace the defective components.<br>6) Defective LCD Controller circuit consists of IC701: Replace the defective components. |
| 4) Backlight does not light | 1) Defective EL Driver circuit consists of T701, Q701: Replace the defective components.<br>2) Defective EL: Replace. |
| 5) Does not squelch and does not scan. | 1) Defective Switching circuit consists of IC3: Replace IC3.<br>2) Defective IC2 squelch control output terminal: Replace IC2.<br>3) Defective voltage regulator circuit consists of Q32, D50: Replace the defective components. |
| 6) Squelch operates but does not scan. | 1) IC503 is running "wild": Press RESTART Switch.<br>2) Defective CPU circuits: Replace the defective components. |
| 7) Operates in MANUAL but does not operate in SCAN. | Squelch control is not adjusted correctly: Adjust Squelch (VR802). |
| 8) Displays but PROGRAM does not operates. | Defective Keyboard or connector and/or associated circuit: Replace the defective components. |

| Symptom | Cause/Remedy |
|---|---|
| 9) No sound in AM mode but NFM, WFM operate. | 1) Defective IC502 or IC503: Replace.<br>2) Defective Switching circuit consists of Q29, D40, D45: Replace the defective components.<br>3) Defective ANL, AF Pre Amp. circuit consists of D32, Q22: Replace the defective components.<br>4) Defective AM IF DET. circuit consists of Q16, Q17, D31: Replace the defective components. |
| 10) No sound in NFM mode but AM, WFM operate. | 1) Defective IC502 or IC503: Replace.<br>2) Defective Switching circuit consists of Q28, D46: Replace the defective components. |
| 11) No sound in AM and NFM MODE but WFM operate. | 1) Defective IC2: Replace. |
| 12) No sound in WFM mode but AM, NFM operate. | 1) Defective IC502, 503 or IC1: Replace.<br>2) Defective Switching circuit consists of Q27, D47: Replace the defective components. |
| 13) Low sensitivity between 25.0000 to 39.9950 MHz. | 1) Defective DECODER SWITCHING circuit consists of IC501, Q501: Replace the defective components.<br>2) Defective Bandpass filter (B.P.F): Replace the defective components. |
| 14) Low sensitivity between 40.0000 to 67.9950 MHz. | 1) Defective DECODER SWITCHING circuit consists of IC501, Q502: Replace the defective components.<br>2) Defective B.P.F: Replace the defective components. |
| 15) Low sensitivity between 68.0000 to 107.9950 MHz. | 1) Defective DECODER SWITCHING circuit consists of IC501, Q503: Replace the defective components.<br>2) Defective B.P.F: Replace the defective components. |
| 16) Low sensitivity between 108.0000 to 173.9950 MHz. | 1) Defective DECODER SWITCHING circuit consists of IC501, Q504: Replace the defective components.<br>2) Defective B.P.F: Replace the defective components. |
| 17) Low sensitivity between 174.0000 to 279.9950 MHz. | 1) Defective DECODER SWITCHING circuit consists of IC501, Q505: Replace the defective components.<br>2) Defective B.P.F: Replace the defective components. |
| 18) Low sensitivity between 280.0000 to 520.0000 MHz. | 1) Defective DECODER SWITCHING circuit consists of IC501, Q506: Replace the defective components.<br>2) Defective B.P.F: Replace the defective components. |
| 19) Low sensitivity between 760.0000 to 1300.0000 MHz. | 1) Defective DECODER SWITCHING circuit consists of IC501, Q507: Replace the defective components.<br>2) Defective B.P.F: Replace the defective components. |
| 20) Does not operate between 25.0000 to 220.4950 MHz or 760.0000 to 1052.4950 MHz. | Defective IC503 port P10, IC502, Q315 and/or VCO-1 circuit: Replace the defective components. |

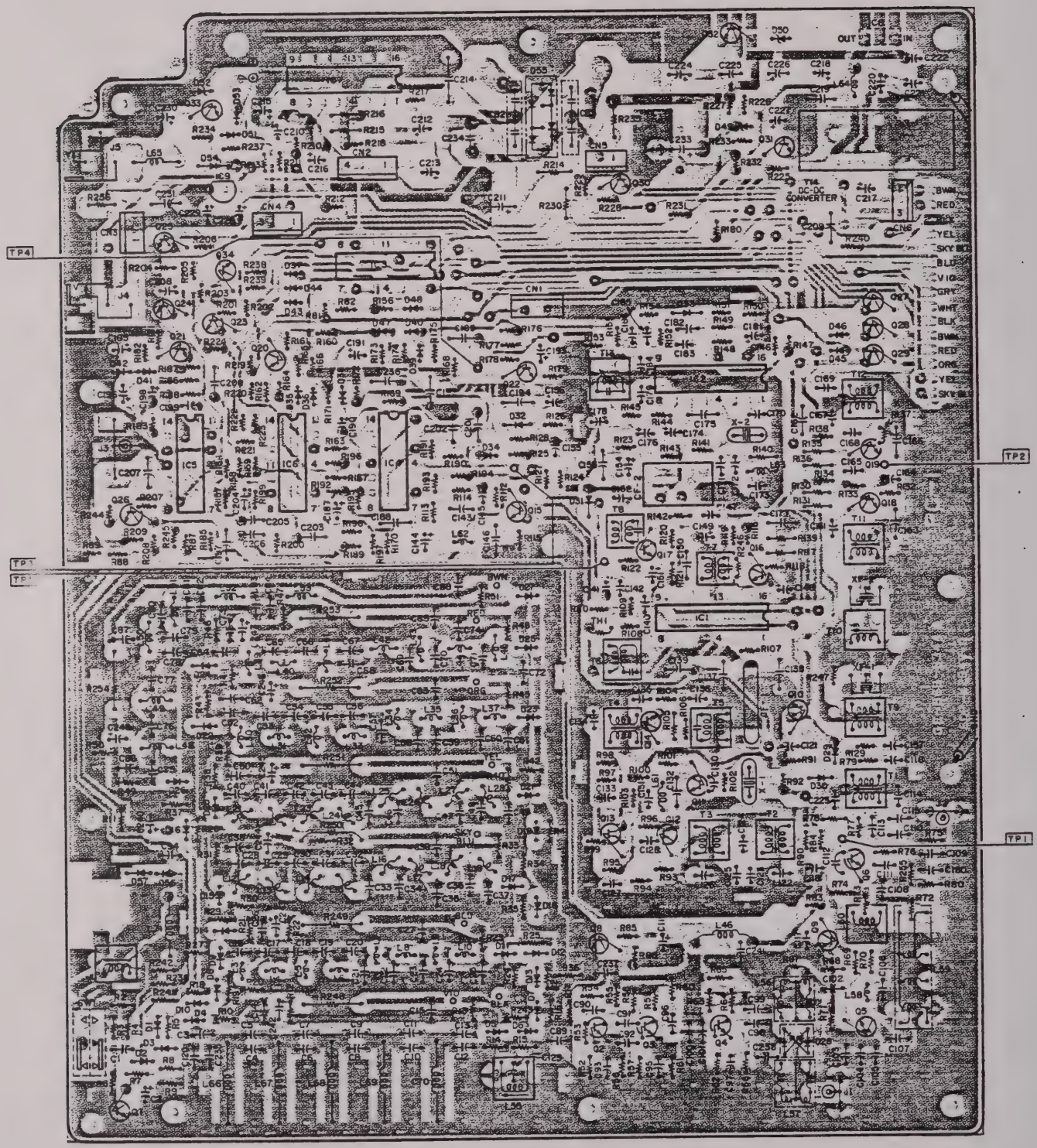
| Symptom | Cause/Remedy |
|---|---|
| 21) Does not operate between 220.5000 to 520.0000 MHz or 1052.5000 to 1300.0000 MHz. | Defective IC503 port P11, IC502, Q316 and/or VCO-2 circuit: Replace the defective components. |
| 22) Low sensitivity between 25.0000 to 520.0000 MHz. | Defective IC503 port P66, IC502, Q301 and/or VCO filter-1 circuit: Replace the defective components. |
| 23) Low sensitivity between 760.0000 to 1300.0000 MHz. | Defective IC503 port P67, IC502, Q302 and/or VCO filter-2 circuit: Replace the defective components. |
| 24) All band do not operate but display is OK. | 1) Defective PLL circuit IC301, IC302, IC303, IC304 and/or associated circuit: Replace the defective components.<br>2) Defective IC305, IC306 and/or associated circuit: Replace the defective components. |
| 25) Searches but does not halt on the correct frequency. | 1) Defective IC6: Replace.<br>2) Discriminator Coil T13 (AM and NFM mode or T6 (WFM mode) is out of adjustment:<br>TP4 shall have approx. 3.8 V in normal receiving AM and NFM mode.<br>TP3 shall have approx. 3.8 V in normal receiving WFM mode. |

# P.C. BOARDS (TOP & BOTTOM VIEWS)

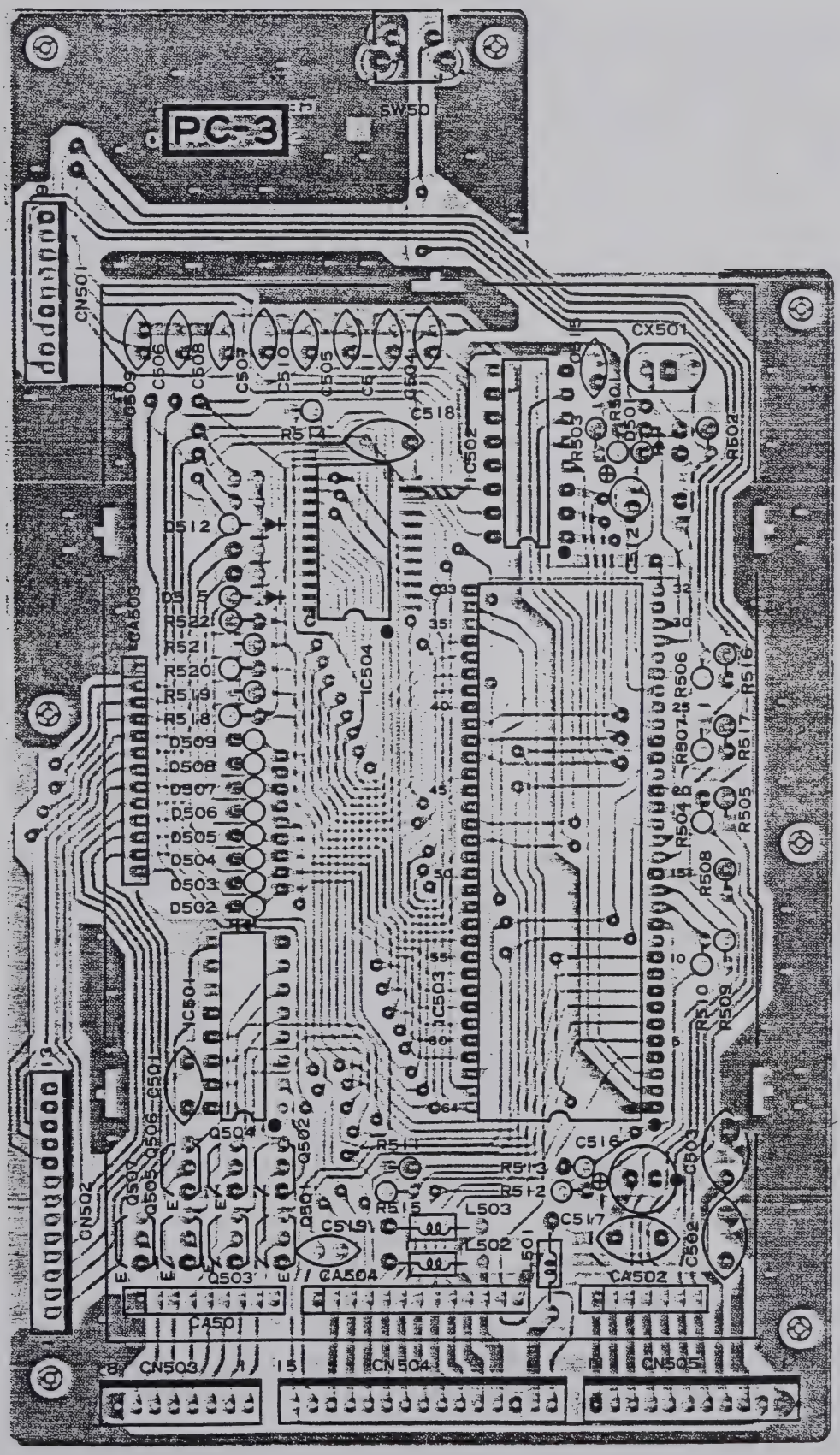
## LINEAR P.C. BOARD (TOP VIEW)



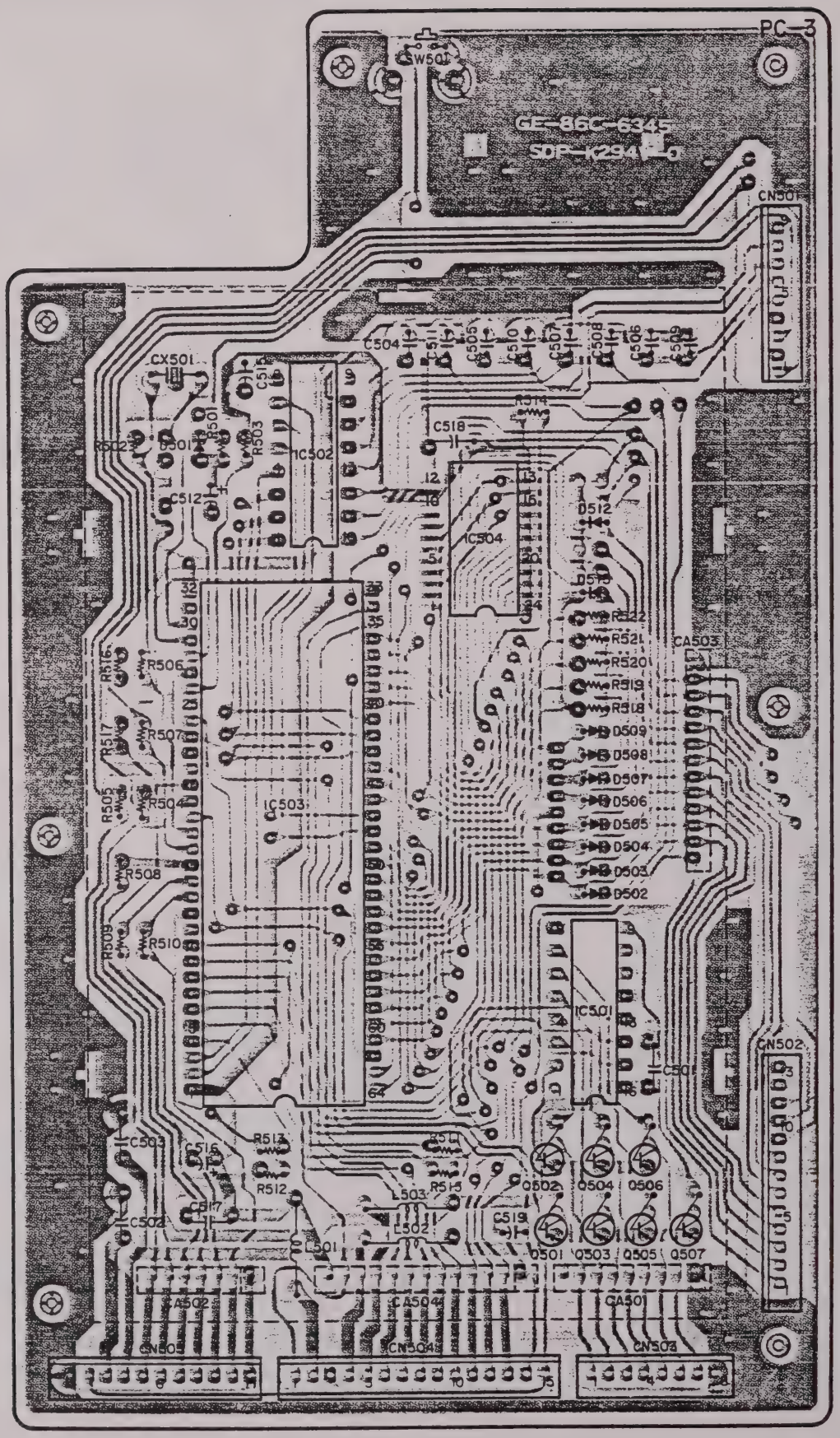
# LINEAR P.C. BOARD (BOTTOM VIEW)



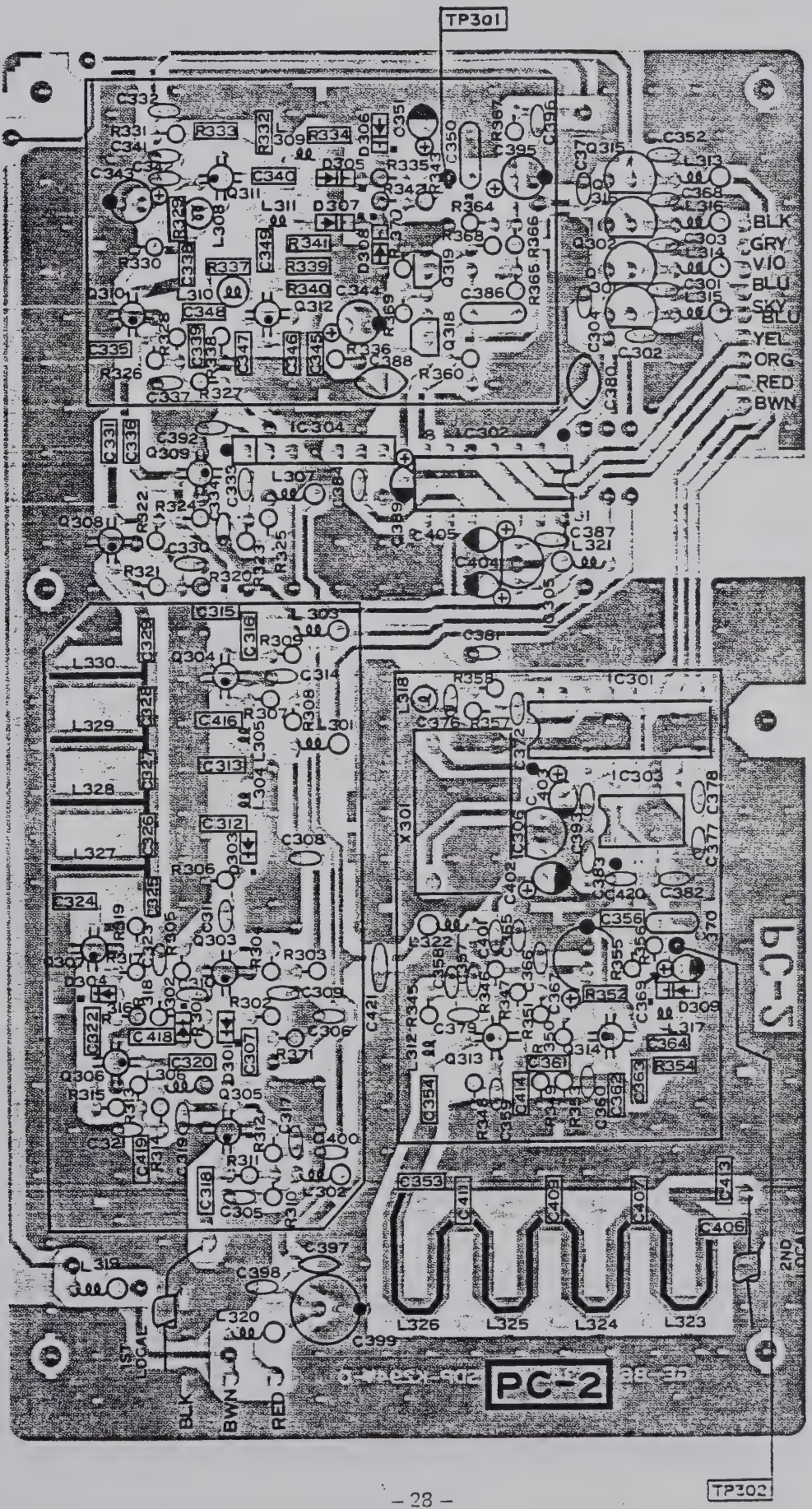
## CPU P.C. BOARD (TOP VIEW)



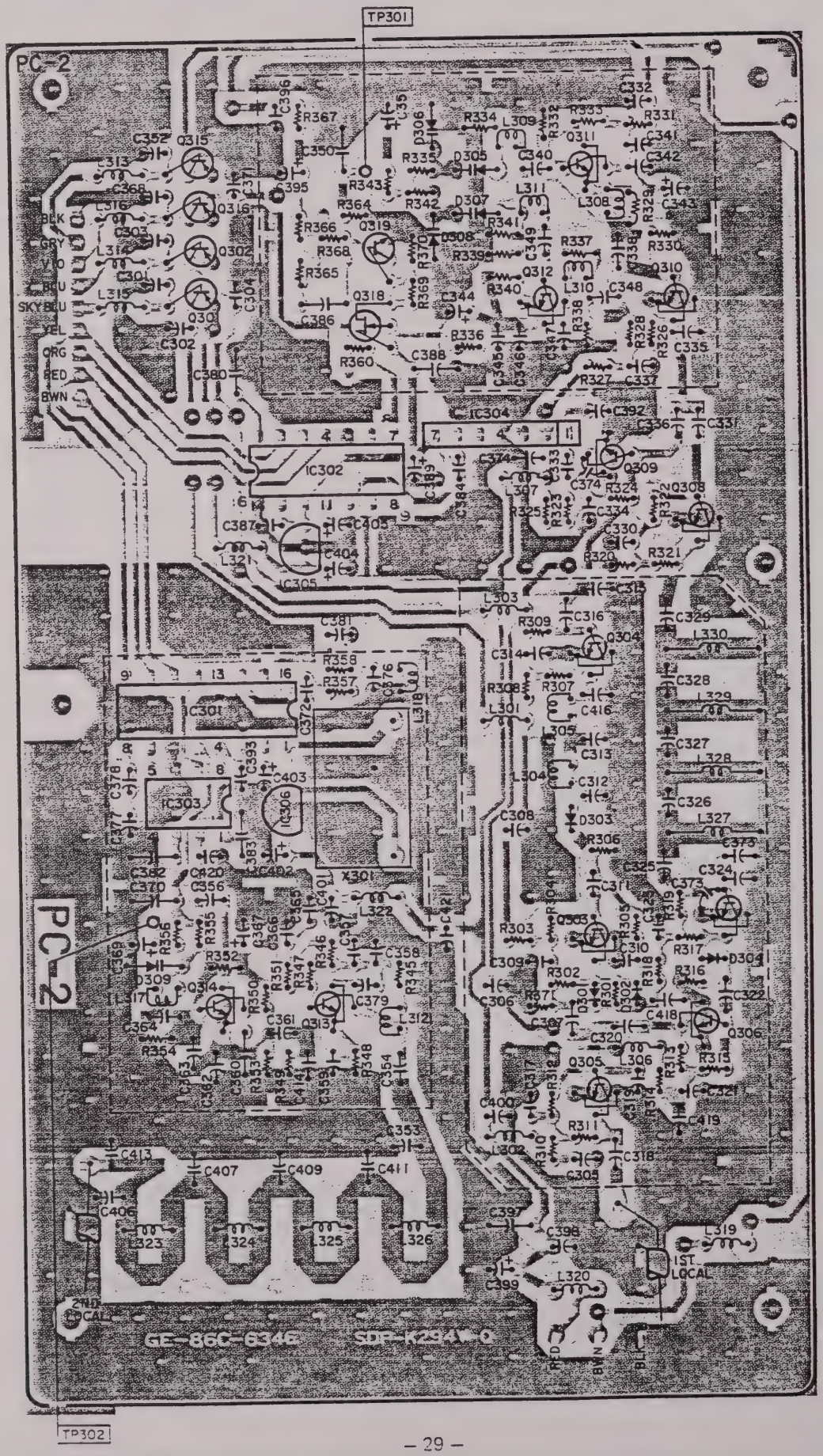
# CPU P.C. BOARD (BOTTOM VIEW)



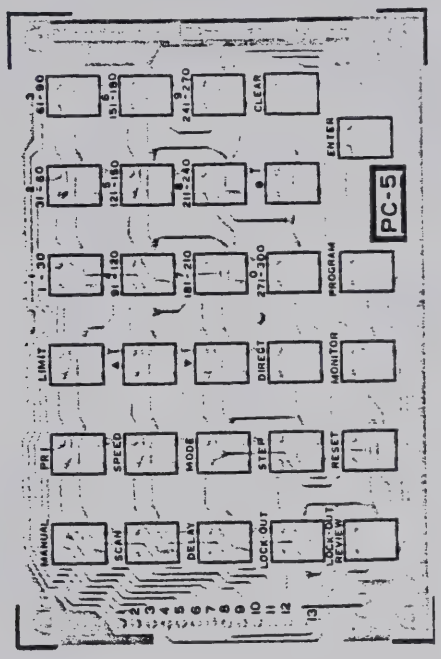
# PLL P.C. BOARD (TOP VIEW)



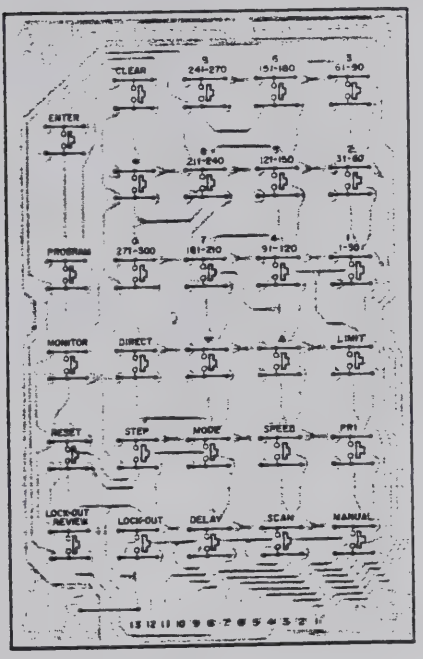
# PLL P.C. BOARD (BOTTOM VIEW)



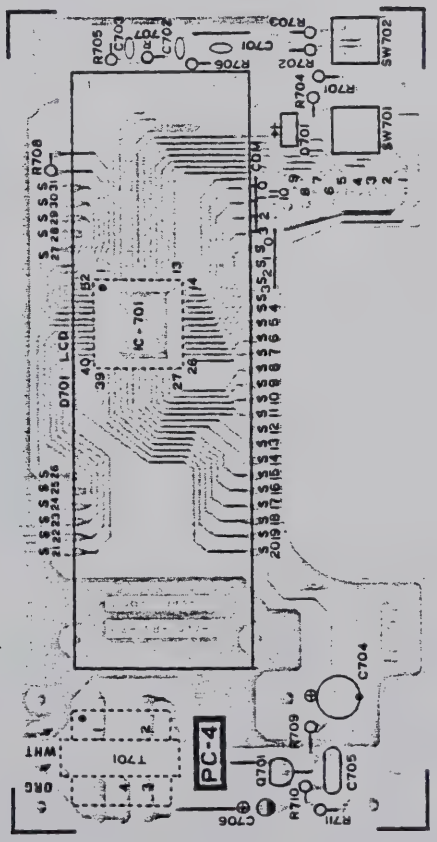
## KEY BOARD P.C. BOARD
(TOP VIEW)



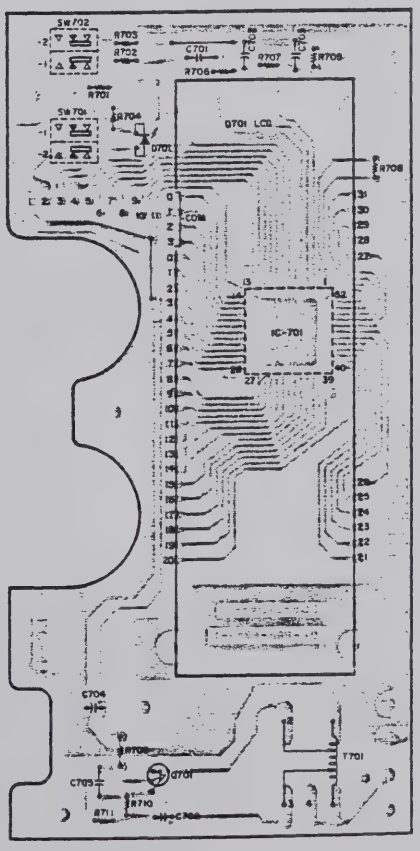

(BOTTOM VIEW)



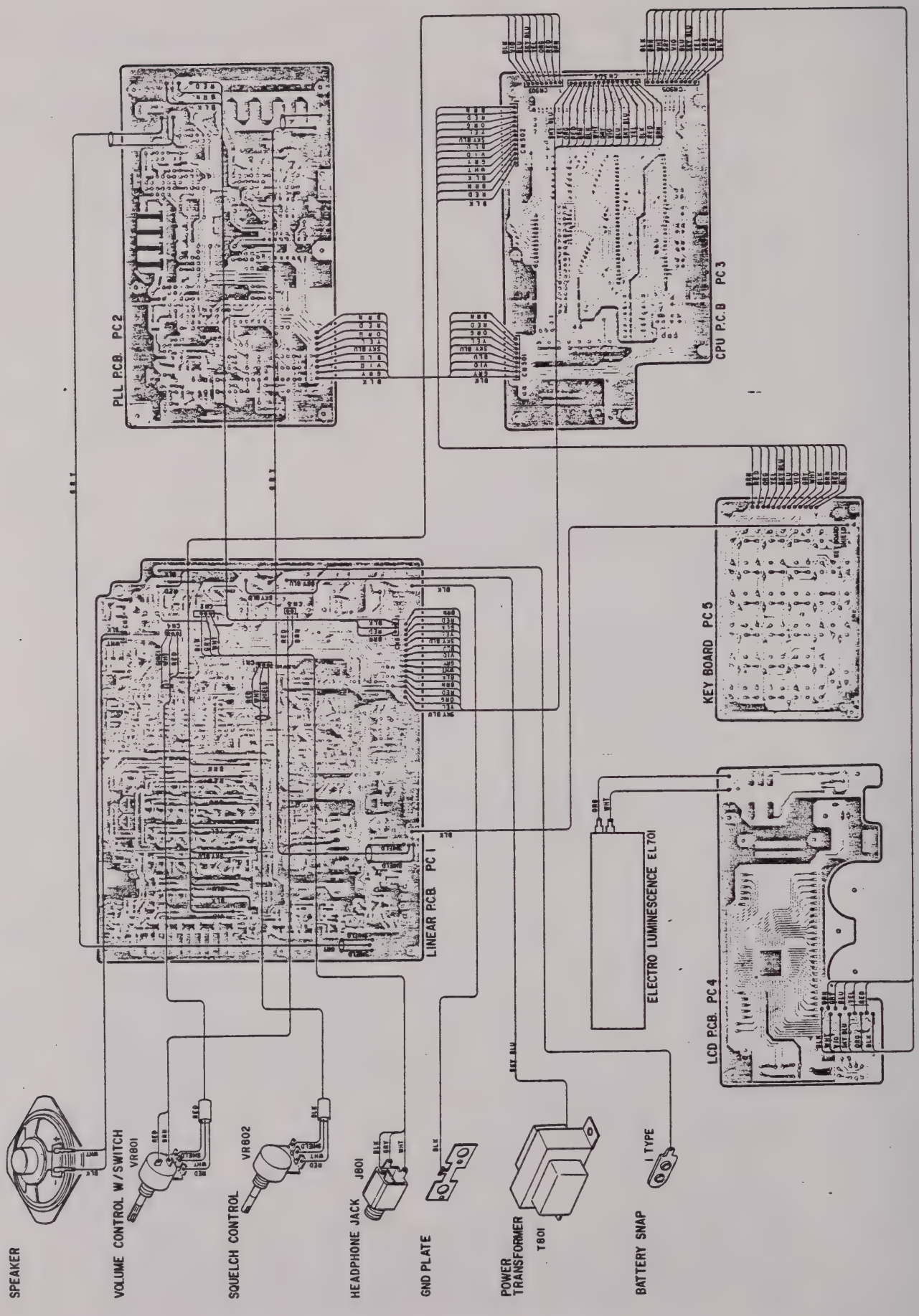

## LCD P.C. BOARD
(TOP VIEW)




(BOTTOM VIEW)



# WIRING DIAGRAM



# ELECTRICAL PARTS LIST

**PRODUCT SAFETY NOTE:** Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice of this service manual. Don't degrade the safety of the product through improper servicing.

| CAPACITORS | | | | | | |
|---|---|---|---|---|---|---|
| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
| C1 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | T1C3K31P1HC102K |
| C2 | Electrolytic | 10μF | 16WV | ±20% | CC-106MDCA | 16MV100SS |
| C3 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C4 | Chip | 0.5pF | 50WV | ±0.25pF | CD-0X5CJBC | C2C31P1HCG0R5C |
| C5 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C6 | Chip | 0.5pF | 50WV | ±0.25pF | CD-0X5CJBC | C2C31P1HCG0R5C |
| C7 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C8 | Chip | 0.5pF | 50WV | ±0.25pF | CD-0X5CJBC | C2C31P1HCG0R5C |
| C9 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C10 | Chip | 0.5pF | 50WV | ±0.25pF | CD-0X5CJBC | C2C31P1HCG0R5C |
| C11 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C12 | Chip | 0.5pF | 50WV | ±0.25pF | CD-0X5CJBC | C2C31P1HCG0R5C |
| C13 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C14 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C15 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C16 | Chip | 12pF | 50WV | ±5% | CD-120JJBC | C2C31P1HCG120J |
| C17 | Chip | 6pF | 50WV | ±0.5pF | CD-060DJBC | C2C31P1HCG060D |
| C18 | Chip | 6pF | 50WV | ±0.5pF | CD-060DJBC | C2C31P1HCG060D |
| C19 | Chip | 6pF | 50WV | ±0.5pF | CD-060DJBC | C2C31P1HCG060D |
| C20 | Chip | 12pF | 50WV | ±5% | CD-120JJBC | C2C31P1HCG120J |
| C21 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C22 | Chip | 12pF | 50WV | ±5% | CD-120JJBC | C2C31P1HCG120J |
| C23 | Chip | 15pF | 50WV | ±5% | CD-150JJBC | C2C31P1HCG150J |
| C24 | Chip | 12pF | 50WV | ±5% | CD-120JJBC | C2C31P1HCG120J |
| C25 | Chip | 10pF | 50WV | ±0.5pF | CD-100DJBC | C2C31P1HCG100D |
| C26 | Chip | 0.001μF | 50WV | ±10% | CD-120KJBC | C3K31P1HC102K |
| C27 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C28 | Chip | 12pF | 50WV | ±5% | CD-120JJBC | C2C31P1HCG120J |
| C29 | Chip | 6pF | 50WV | ±0.5pF | CD-060DJBC | C2C31P1HCG060D |
| C30 | Chip | 6pF | 50WV | ±0.5pF | CD-060DJBC | C2C31P1HCG060D |
| C31 | Chip | 6pF | 50WV | ±0.5pF | CD-060DJBC | C2C31P1HCG060D |
| C32 | Chip | 12pF | 50WV | ±5% | CD-102JJBC | C2C31P1HCG120J |
| C33 | Chip | 8pF | 50WV | ±0.5pF | CD-080CJBC | C2C31P1HCG080D |
| C34 | Chip | 22pF | 50WV | ±5% | CD-220JJBC | C2C31P1HCG220J |
| C35 | Chip | 22pF | 50WV | ±5% | CD-220JJBC | C2C31P1HCG220J |
| C36 | Chip | 22pF | 50WV | ±5% | CD-220JJBC | C2C31P1HCG220J |
| C37 | Chip | 8pF | 50WV | ±0.5pF | CD-080CJBC | C2C31P1HCG080D |
| C38 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C39 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C40 | Chip | 27pF | 50WV | ±5% | CD-270JJBC | C2C31P1HCG270J |
| C41 | Chip | 12pF | 50WV | ±5% | CD-120JJBC | C2C31P1HCG120J |
| C42 | Chip | 12pF | 50WV | ±5% | CD-120JJBC | C2C31P1HCG120J |
| C43 | Chip | 12pF | 50WV | ±5% | CD-120JJBC | C2C31P1HCG120J |
| C44 | Chip | 27pF | 50WV | ±5% | CD-270JJBC | C2C31P1HCG270J |
| C45 | Chip | 22pF | 50WV | ±5% | CD-220JJBC | C2C31P1HCG220J |
| C46 | Chip | 39pF | 50WV | ±5% | CD-390JJBC | C2C31P1HCG390J |
| C47 | Chip | 47pF | 50WV | ±5% | CD-470JJBC | C2C31P1HCG470J |
| C48 | Chip | 39pF | 50WV | ±5% | CD-390JJBC | C2C31P1HCG390J |
| C49 | Chip | 22pF | 50WV | ±5% | CD-220JJBC | C2C31P1HCG220J |
| C50 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C51 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C52 | Chip | 39pF | 50WV | ±5% | CD-390JJBC | C2C31P1HCG390J |

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| C53 | Chip | 18pF | 50WV | ±5% | CD-180JJBC | C2C31P1HCG180J |
| C54 | Chip | 18pF | 50WV | ±5% | CD-180JJBC | C2C31P1HCG180J |
| C55 | Chip | 18pF | 50WV | ±5% | CD-180JJBC | C2C31P1HCG180J |
| C56 | Chip | 39pF | 50WV | ±5% | CD-390JJBC | C2C31P1HCG390J |
| C57 | Chip | 33pF | 50WV | ±5% | CD-330JJBC | C2C31P1HCG330J |
| C58 | Chip | 68pF | 50WV | ±5% | CD-680JJBC | C2C31P1HCG680J |
| C59 | Chip | 68pF | 50WV | ±5% | CD-680JJBC | C2C31P1HCG680J |
| C60 | Chip | 68pF | 50WV | ±5% | CD-680JJBC | C2C31P1HCG680J |
| C61 | Chip | 22pF | 50WV | ±5% | CD-220JJBC | C2C31P1HCG220J |
| C62 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C63 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C64 | Chip | 68pF | 50WV | ±5% | CD-680JJBC | C2C31P1HCG680J |
| C65 | Chip | 27pF | 50WV | ±5% | CD-270JJBC | C2C31P1HCG270J |
| C66 | Chip | 27pF | 50WV | ±5% | CD-270JJBC | C2C31P1HCG270J |
| C67 | Chip | 68pF | 50WV | ±5% | CD-680JJBC | C2C31P1HCG680J |
| C68 | Chip | 47pF | 50WV | ±5% | CD-470JJBC | C2C31P1HCG470J |
| C69 | Chip | 100pF | 50WV | ±5% | CD-101JJBC | C2C31P1HCG101J |
| C70 | Chip | 100pF | 50WV | ±5% | CD-101JJBC | C2C31P1HCG101J |
| C71 | Chip | 100pF | 50WV | ±5% | CD-101JJBC | C2C31P1HCG101J |
| C72 | Chip | 27pF | 50WV | ±5% | CD-270JJBC | C2C31P1HCG270J |
| C73 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C74 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C75 | Chip | 220pF | 50WV | ±5% | CD-221JJBC | C2C31P1HCG221J |
| C76 | Chip | 47pF | 50WV | ±5% | CD-470JJBC | C2C31P1HCG470J |
| C77 | Chip | 68pF | 50WV | ±5% | CD-680JJBC | C2C31P1HCG680J |
| C78 | Chip | 68pF | 50WV | ±5% | CD-680JJBC | C2C31P1HCG680J |
| C79 | Chip | 150pF | 50WV | ±5% | CD-151JJBC | C2C31P1HCG151J |
| C80 | Chip | 20pF | 50WV | ±5% | CD-200JJBC | C2C31P1HCG200J |
| C81 | Chip | 150pF | 50WV | ±5% | CD-151JJBC | C2C31P1HCG151J |
| C82 | Chip | 20pF | 50WV | ±5% | CD-200JJBC | C2C31P1HCG200J |
| C83 | Chip | 150pF | 50WV | ±5% | CD-151JJBC | C2C31P1HCG151J |
| C84 | Chip | 20pF | 50WV | ±5% | CD-200JJBC | C2C31P1HCG200J |
| C85 | Chip | 47pF | 50WV | ±5% | CD-470JJBC | C2C31P1HCG470J |
| C86 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C87 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C88 | Chip | 0.01μF | 50WV | ±10% | CD-103KJBC | C3K31P1HC103K |
| C89 | Chip | 100pF | 50WV | ±5% | CD-101JJBC | C2C31P1HCG101J |
| C90 | Chip | 10pF | 50WV | ±0.5pF | CD-100DJBC | C2C31P1HCG100D |
| C91 | Chip | 100pF | 50WV | ±5% | CD-101JJBC | C2C31P1HCG101J |
| C92 | Chip | 4pF | 50WV | ±0.5pF | CD-040CJBC | C2C31P1HCG040D |
| C93 | Chip | 10pF | 50WV | ±0.5pF | CD-100DJBC | C2C31P1HCG100D |
| C94 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C95 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C96 | Chip | 100pF | 50WV | ±5% | CD-101JJBC | C2C31P1HCG101J |
| C97 | Chip | 6pF | 50WV | ±0.5pF | CD-060DJBC | C2C31P1HCG060D |
| C98 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C99 | Chip | 100pF | 50WV | ±5% | CD-101JJBC | C2C31P1HCG101J |
| C100 | Chip | 100pF | 50WV | ±5% | CD-101JJBC | C2C31P1HCG101J |
| C101 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C102 | Chip | 33pF | 50WV | ±5% | CD-330JJBC | C2C31P1HCG330J |
| C103 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C104 | Chip | 22pF | 50WV | ±5% | CD-220JJBC | C2C31P1HCG220J |
| C105 | Chip | 0.01μF | 50WV | ±10% | CD-103KJBC | C3K31P1HC103K |
| C106 | Chip | 470pF | 50WV | ±5% | CC-471JJBC | C2C31P1HCG471J |
| C107 | Chip | 33pF | 50WV | ±5% | CD-330JJBC | C2C31P1HCG330J |
| C108 | Chip | 33pF | 50WV | ±5% | CD-330JJBC | C2C31P1HCG330J |
| C109 | Chip | 22pF | 50WV | ±5% | CD-220JJBC | C2C31P1HCG220J |

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| C110 | Chip | 10pF | 50WV | ±0.5pF | CD-100DJBC | C2C31P1HCG100D |
| C111 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C112 | Chip | 5pF | 50WV | ±0.5pF | CC-050CJBC | C2C31P1HCG050D |
| C113 | Chip | 18pF | 50WV | ±5% | CD-180JJBC | C2C31P1HCG180J |
| C114 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C115 | Chip | 33pF | 50WV | ±5% | CC-330JJBC | C2C31P1HCG330J |
| C116 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C117 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C118 | Electrolytic | 10μF | 16WV | ±20% | CC-106MDCA | 16MV100HA |
| C119 | Electrolytic | 33μF | 16WV | ±20% | CC-336MDCA | 16MV330HA |
| C120 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C121 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C122 | Ceramic | 10pF | 50WV | ±0.5pF | CC-100DJBC | HE40SJSL100D |
| C123 | Ceramic | 10pF | 50WV | ±10% | CC-100DJBC | HE40SJUJ100K |
| C124 | Ceramic | 1pF | 50WV | ±0.5pF | CC-010CJBC | HE40SJCH010D |
| C125 | Ceramic | 10pF | 50WV | ±10% | CC-100DJBC | HE40SJUJ100K |
| C126 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C127 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C128 | Ceramic | 10pF | 50WV | ±0.5pF | CC-100DJBC | HE40SJSL100D |
| C129 | Chip | 2pF | 50WV | ±0.5pF | CC-020DJBC | C2C31P1HCG020D |
| C130 | Ceramic | 22pF | 50WV | ±10% | CC-220KJBC | HE40SJSL220K |
| C131 | Ceramic | 56pF | 50WV | ±10% | CC-560JJBC | HE40SJSL560K |
| C132 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C133 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C134 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C135 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C136 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C137 | Mylar* | 0.047μF | 50WV | ±10% | CC-473KJBM | AK1-UU473K50 |
| C138 | Mylar | 0.047μF | 50WV | ±10% | CC-473KJBM | AK1-UU473K50 |
| C139 | Mylar | 0.1μF | 50WV | ±10% | CC-104KJBM | AK1-UU104K50 |
| C140 | Ceramic | 470pF | 50WV | ±10% | CC-471KJBC | HE40SJYB471K |
| C141 | Ceramic | 100pF | 50WV | ±10% | CC-101KJBC | HE40SJYB101K |
| C142 | Ceramic | 470pF | 50WV | ±10% | CC-471KJBC | HE40SJYB471K |
| C143 | Mylar | 0.0022μF | 50WV | ±10% | CC-222KJBM | AK1-UU222K50 |
| C144 | Electrolytic | 10μF | 16WV | ±20% | CC-106MDCA | 16MV100HA |
| C145 | Ceramic | 47pF | 50WV | ±10% | CC-470KJBC | HE40SJSL470K |
| C146 | Mylar | 0.047μF | 50WV | ±10% | CC-473KJBM | AK1-UU473K50 |
| C147 | Ceramic | 470pF | 50WV | ±10% | CC-471KJBC | HE40SJYB471K |
| C148 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C149 | Electrolytic | 10μF | 16WV | ±20% | CC-106MDCA | 16MV100HA |
| C150 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C151 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C152 | Electrolytic | 10μF | 16WV | ±20% | CC-106MDCA | 16MV100HA |
| C153 | Mylar | 0.056μF | 50WV | ±10% | CC-563KJBM | AK1-UU563K50 |
| C154 | Electrolytic | 22μF | 16WV | ±20% | CC-226MDCA | 16MV220HA |
| C155 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C156 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C157 | Ceramic | 33pF | 50WV | ±10% | CC-330KJBC | HE40SJSL330K |
| C158 | Not used | | | | | |
| C159 | Not used | | | | | |
| C160 | Not used | | | | | |
| C161 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C162 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C163 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C164 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C165 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C166 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |

* Mylar is a registered trademark of E.I. Du Pont de Nemours and Company.

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| C167 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C168 | Ceramic | 10pF | 50WV | ±10% | CC-100DJBC | HE40SJUJ100K |
| C169 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C170 | Ceramic | 33pF | 50WV | ±10% | CC-330KJBC | HE40SJSL330K |
| C171 | Ceramic | 10pF | 50WV | ±0.5pF | CC-100DJBC | HE40SJSL100D |
| C172 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C173 | Ceramic | 10pF | 50WV | ±0.5pF | CC-100DJBC | HE40SJSL100D |
| C174 | Tantalum | 0.47μF | 35WV | ±20% | CC-474MGBT | DN1VR47M1S |
| C175 | Ceramic | 0.047μF | 50WV | +80%–20% | CC-473ZJBC | HE13SJYF473Z |
| C176 | Tantalum | 0.1μF | 35WV | ±20% | CC-104MGBT | DN1V0R1M1S |
| C177 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C178 | Electrolytic | 220μF | 16WV | ±20% | CC-227MDCA | 16MV221HA |
| C179 | Ceramic | 10pF | 50WV | ±0.5pF | CC-100DJBC | HE40SJSL100D |
| C180 | Chip | 5pF | 50WV | ±0.5pF | CD-050DJBC | C2C31P1HCG050D |
| C181 | Tantalum | 0.22μF | 35WV | ±20% | CC-224MGBT | DN1VR22M1S |
| C182 | Mylar | 0.01μF | 50WV | ±10% | CC-103KJBM | AK1-UU103K50 |
| C183 | Ceramic | 5pF | 50WV | ±0.5pF | CC-050CJBC | HE40SJSL050D |
| C184 | Mylar | 0.0068μF | 50WV | ±10% | CC-682KJBM | AK1-UU682K50 |
| C185 | Ceramic | 470pF | 50WV | ±10% | CC-471KJBC | HE40SJYB471K |
| C186 | Ceramic | 470pF | 50WV | ±10% | CC-471KJBC | HE40SJYB471K |
| C187 | Tantalum | 0.1μF | 35WV | ±20% | CC-104MGBT | DN1V0R1M1S |
| C188 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C189 | Mylar | 0.047μF | 50WV | ±10% | CC-473KJBM | AK1-UU473K50 |
| C190 | Electrolytic | 0.1μF | 50WV | ±20% | CC-104MJBA | 50MVR10HA |
| C191 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C192 | Mylar | 0.056μF | 50WV | ±10% | CC-563KJBM | AK1-UU563K50 |
| C193 | Electrolytic | 0.1μF | 50WV | ±20% | CC-104MJBA | 50MVR10HA |
| C194 | Mylar | 0.056μF | 50WV | ±10% | CC-563KJBM | AK1-UU563K50 |
| C195 | Electrolytic | 4.7μF | 25WV | ±20% | CC-475MFBA | 25MV4R7HA |
| C196 | Tantalum | 0.1μF | 35WV | ±20% | CC-104MGBT | DN1V0R1M1S |
| C197 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C198 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C199 | Ceramic | 330pF | 50WV | ±10% | CC-331KJBC | HE40SJYB331K |
| C200 | Mylar | 0.082μF | 50WV | ±10% | CC-823KJBM | AK1-UU823K50 |
| C201 | Mylar | 0.056μF | 50WV | ±10% | CC-563KJBM | AK1-UU563K50 |
| C202 | Mylar | 0.0047μF | 50WV | ±10% | CC-472KJBM | AK1-UU472K50 |
| C203 | Mylar | 0.047μF | 50WV | ±10% | CC-473KJBM | AK1-UU473K50 |
| C204 | Ceramic | 0.0015μF | 50WV | ±10% | CC-152KJBC | HE60SJYB152K |
| C205 | Mylar | 0.0068μF | 50WV | ±10% | CC-682KJBM | AK1-UU682K50 |
| C206 | Mylar | 0.0068μF | 50WV | ±10% | CC-682KJBM | AK1-UU682K50 |
| C207 | Mylar | 0.047μF | 50WV | ±10% | CC-473KJBM | AK1-UU473K50 |
| C208 | Electrolytic | 2.2μF | 50WV | ±20% | CC-225MJBA | 50MV2R2HA |
| C209 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C210 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010SS |
| C211 | Electrooytic | 1000μF | 25WV | ±20% | CC-108MFBA | 25MV102HA |
| C212 | Electrolytic | 47μF | 16WV | ±20% | CC-476MDCA | 16MV470SS |
| C213 | Electrolytic | 100μF | 16WV | ±20% | CC-107MDCA | 16MV101HA |
| C214 | Mylar | 0.22μF | 50WV | ±10% | CC-224KJBM | AK1-UU224K50 |
| C215 | Electrolytic | 10μF | 16WV | ±20% | CC-106MDCA | 16MV100SS |
| C216 | Electrolytic | 2.2μF | 50WV | ±20% | CC-225MJBA | 50MV2R2SS |
| C217 | Electrolytic | 10μF | 50WV | ±20% | CC-106MJBA | 50MV100HA |
| C218 | Electrolytic | 33μF | 16WV | ±20% | CC-336MDCA | 16MV330HA |
| C219 | Ceramic | 0.047μF | 50WV | +80%–20% | CC-473ZJBC | HE13SJYF473Z |
| C220 | Electrolytic | 33μF | 16WV | ±20% | CC-336MDCA | 16MV330HA |
| C221 | Tantalum | 0.1μF | 35WV | ±20% | CC-104MGBT | DN1V0R1M1S |
| C222 | Tantalum | 0.33μF | 35WV | ±20% | CC-334MGBT | DN1VR33M1S |
| C223 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| C224 | Electrolytic | 220μF | 16WV | ±20% | CC-227MDCA | 16MV221HA |
| C225 | Mylar | 0.033μF | 50WV | ±10% | CC-333KJBM | AK1-UU333K50 |
| C226 | Electrolytic | 220μF | 16WV | ±20% | CC-227MDCA | 16MV221HA |
| C227 | Electrolytic | 100μF | 16WV | ±20% | CC-107MDCA | 16MV101HA |
| C228 | Electrolytic | 0.1μF | 50WV | ±20% | CC-104MJBA | 50MVR10SS |
| C229 | Electrolytic | 0.1μF | 50WV | ±20% | CC-104MJBA | 50MVR10SS |
| C230 | Electrolytic | 10μF | 16WV | ±20% | CC-106MDCA | 16MV100HA |
| C231 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C232 | Not used | | | | | |
| ⚠C233 | Electrolytic | 2200μF | 25WV | ±20% | CC-228MFBA | 25MV222HA |
| C234 | Electrolytic | 470μF | 25WV | ±20% | CC-477MFBA | 25MV471HA |
| C235 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C236 | Mylar | 0.022μF | 50WV | ±10% | CC-273KJBM | AK1-UU223K50 |
| C237 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C238 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C239 | Not used | | | | | |
| C240 | Electrolytic | 33μF | 16WV | ±20% | CC-336MDCA | 16MV330HA |
| C241 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C242 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C243 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C244 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C245 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C246 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C247 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C248 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C301 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C302 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C303 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C304 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C305 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C306 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C307 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C308 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C309 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C310 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C311 | Ceramic | 5pF | 50WV | ±0.5pF | CC-050CJBC | HE40SJSL050D |
| C312 | Chip | 3pF | 50WV | ±0.5pF | CD-030CJBC | C2C31P1HCG030D |
| C313 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C314 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C315 | Chip | 4pF | 50WV | ±0.5pF | CD-040CJBC | C2C31P1HCG040D |
| C316 | Chip | 10pF | 50WV | ±0.5pF | CD-100DJBC | C2C31P1HCG100D |
| C317 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C318 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C319 | Ceramic | 1pF | 50WV | ±0.5pF | CC-010CJBC | HE40SJSL010D |
| C320 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C321 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C322 | Chip | 1pF | 50WV | ±0.25pF | CD-010CJBC | C2C31P1HCG010C |
| C323 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C324 | Chip | 0.5pF | 50WV | ±0.25pF | CD-0X5CJBC | C2C31P1HCG0R5C |
| C325 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C326 | Chip | 1pF | 50WV | ±0.25pF | CD-010CJBC | C2C31P1HCG010C |
| C327 | Chip | 1pF | 50WV | ±0.25pF | CD-010CJBC | C2C31P1HCG010C |
| C328 | Chip | 1pF | 50WV | ±0.25pF | CD-010CJBC | C2C31P1HCG010C |
| C329 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C330 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C331 | Chip | 3pF | 50WV | ±0.5pF | CD-030CJBC | C2C31P1HCG030D |
| C332 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| C333 | Ceramic | 5pF | 50WV | ±0.5pF | CC-050CJBC | HE40SJSL050D |
| C334 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C335 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C336 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C337 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C338 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C339 | Not used | | | | | |
| C340 | Chip | 22pF | 50WV | ±0.5pF | CD-220DJBC | C2C31P1HCG220D |
| C341 | Ceramic | 22pF | 50WV | ±10% | CC-220KJBC | HE40SJSL220K |
| C342 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C343 | Electrolytic | 10μF | 16WV | ±20% | CC-106MDCA | 16MV100HA |
| C344 | Electrolytic | 10μF | 16WV | ±20% | CC-106MDCA | 16MV100HA |
| C345 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C346 | Chip | 22pF | 50WV | ±0.5pF | CD-220DJBC | C2C31P1HCG220D |
| C347 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C348 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C349 | Chip | 10pF | 50WV | ±0.5pF | CD-100DJBC | C2C31P1HCG100D |
| C350 | Mylar | 0.047μF | 50WV | ±10% | CC-473KJBM | AK1-UU473K50 |
| C351 | Tantalum | 0.1μF | 35WV | ±20% | CC-104MGBT | DN1V0R1M1S |
| C352 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C353 | Chip | 4pF | 50WV | ±0.5pF | CD-040CJBC | C2C31P1HCG040D |
| C354 | Chip | 10pF | 50WV | ±0.5pF | CD-100DJBC | C2C31P1HCG100D |
| C355 | Not used | | | | | |
| C356 | Chip | 0.5pF | 50WV | ±0.25pF | CD-0X5CJBC | C2C31P1HCG0R5C |
| C357 | Ceramic | 33pF | 50WV | ±10% | CC-330KJBC | HE40SJSL330K |
| C358 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C359 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C360 | Ceramic | 100pF | 50WV | ±10% | CC-101KJBC | HE50SJSL101K |
| C361 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C362 | Chip | 6pF | 50WV | ±0.5pF | CD-060DJBC | C2C31P1HCG060D |
| C363 | Chip | 10pF | 50WV | ±0.5pF | CD-100DJBC | C2C31P1HCG100D |
| C364 | Chip | 10pF | 50WV | ±0.5pF | CD-100DJBC | C2C31P1HCG100D |
| C365 | Ceramic | 33pF | 50WV | ±10% | CC-330KJBC | HE40SJSL330K |
| C366 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C367 | Electrolytic | 220μF | 16WV | ±20% | CC-227MDCA | 16MV221HA |
| C368 | Ceramic | 0.001μF | 50WV | ±10% | CD-102KJBC | HE50SJYB102K |
| C369 | Tantalum | 0.47μF | 35WV | ±20% | CC-474MGBT | DN1VR47M1S |
| C370 | Mylar | 0.047μF | 50WV | ±10% | CC-473KJBM | AK1-UU473K50 |
| C371 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C372 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C373 | Chip | 1pF | 50WV | ±0.25pF | CD-010CJBC | C2C31P1HCG010C |
| C374 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C375 | Not used | | | | | |
| C376 | Ceramic | 22pF | 50WV | ±10% | CC-220KJBC | HE40SJSL220K |
| C377 | Ceramic | 5pF | 50WV | ±0.5pF | CC-050CJBC | HE40SJSL050D |
| C378 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C379 | Ceramic | 100pF | 50WV | ±10% | CC-101KJBC | HE50SJSL101K |
| C380 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C381 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C382 | Ceramic | 0.0022μF | 50WV | ±10% | CC-222KJBC | HE60SJYB222K |
| C383 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C384 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C385 | Not used | | | | | |
| C386 | Mylar | 0.047μF | 50WV | ±10% | CC-473KJBM | AK1-UU473K50 |
| C387 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C388 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C389 | Tantalum | 0.1μF | 35WV | ±20% | CC-104MGBT | DN1V0R1M1S |

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| C390 | Not used | | | | | |
| C391 | Not used | | | | | |
| C392 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C393 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C394 | Not used | | | | | |
| C395 | Electrolytic | 10μF | 50WV | ±20% | CC-106MJBA | 50MV100HA |
| C396 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C397 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C398 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C399 | Electrolytic | 220μF | 16WV | ±20% | CC-227MDCA | 16MV221HA |
| C400 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C401 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C402 | Tantalum | 0.33μF | 35WV | ±20% | CC-334MGBT | DN1VR33M1S |
| C403 | Tantalum | 0.1μF | 35WV | ±20% | CC-104MGBT | DN1V0R1M1S |
| C404 | Tantalum | 0.33μF | 35WV | ±20% | CC-334MGBT | DN1VR33M1S |
| C405 | Tantalum | 0.1μF | 35WV | ±20% | CC-104MGBT | DN1V0R1M1S |
| C406 | Chip | 4pF | 50WV | ±0.5pF | CD-040CJBC | C2C31P1HCG040D |
| C407 | Chip | 3pF | 50WV | ±0.5pF | CD-030CJBC | C2C31P1HCG030D |
| C408 | Not used | | | | | |
| C409 | Chip | 8pF | 50WV | ±0.5pF | CD-080DJBC | C2C31P1HCG080D |
| C410 | Not used | | | | | |
| C411 | Chip | 3pF | 50WV | ±0.5pF | CD-030CJBC | C2C31P1HCG030D |
| C412 | Not used | | | | | |
| C413 | Chip | 1pF | 50WV | ±0.25pF | CD-010CJBC | C2C31P1HCG010C |
| C414 | Chip | 1pF | 50WV | ±0.25pF | CD-010CJBC | C2C31P1HCG010C |
| C415 | Not used | | | | | |
| C416 | Chip | 3pF | 50WV | ±0.5pF | CD-030CJBC | C2C31P1HCG030D |
| C417 | Not used | | | | | |
| C418 | Chip | 4pF | 50WV | ±0.5pF | CD-040CJBC | C2C31P1HCG040D |
| C419 | Chip | 4pF | 50WV | ±0.5pF | CD-040CJBC | C2C31P1HCG040D |
| C420 | Ceramic | 5pF | 50WV | ±0.5pF | CC-050CJBC | HE40SJSL050D |
| C421 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C501 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C502 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C503 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C504 | Ceramic | 100pF | 50WV | ±10% | CC-101KJBC | HE40SJYB101K |
| C505 | Ceramic | 100pF | 50WV | ±10% | CC-101KJBC | HE40SJYB101K |
| C506 | Ceramic | 100pF | 50WV | ±10% | CC-101KJBC | HE40SJYB101K |
| C507 | Ceramic | 100pF | 50WV | ±10% | CC-101KJBC | HE40SJYB101K |
| C508 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C509 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C510 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C511 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C512 | Electrolytic | 4.7μF | 25WV | ±20% | CC-475MFBA | 25MV4R7HA |
| C513 | Not used | | | | | |
| C514 | Not used | | | | | |
| C515 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C516 | Electrolytic | 10μF | 16WV | ±20% | CC-106MDCA | 16MV100HA |
| C517 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C518 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C519 | Ceramic | 100pF | 50WV | ±10% | CC-101KJBC | HE40SJYB101K |
| C701 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C702 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C703 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C704 | Electrolytic | 100μF | 16WV | ±20% | CC-107MDCA | 16MV101SS |
| C705 | Mylar | 0.047μF | 50WV | ±10% | CC-473KJBM | AK1-UU473K50 |
| C706 | Tantalum | 6.8μF | 10WV | ±20% | CC-685MCBT | DN1A6R8M1S |

| CAPACITOR ARRAY | | | | | |
|---|---|---|---|---|---|
| Ref. No. | Description | | | RS Part Number | MFR's Part Number |
| CA501 | 0.001μFx8 | 50WV | +80%–20% | | EXF-P8102ZF |
| CA502 | 100pFx6 | 50WV | ±20% | C-1814 | EXF-P6101MF |
| CA503 | 100pFx12 | 50WV | ±20% | C-1815 | EXF-P12101MF |
| CA504 | 100pFx12 | 50WV | ±20% | C-1815 | EXF-P12101MF |
| CB1 | 0.01μFx2 | 250V | +80%–20% | CA-1816 | EXR-FS203ZS |
| CB2 | 0.01μFx2 | 250V | +80%–20% | CA-1816 | EXR-FS203ZS |

| DIODE | | | | |
|---|---|---|---|---|
| Ref. No. | Description | | RS Part Number | MFR's Part Number |
| D1 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D2 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D3 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D4 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D5 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D6 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D7 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D8 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D9 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D10 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D11 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D12 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D13 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D14 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D15 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D16 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D17 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D18 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D19 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D20 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D21 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D22 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D23 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D24 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D25 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D26 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D27 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D28 | ND487C1-3R | (Silicon) | DX-2773 | ND487C1-3R |
| D29 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D30 | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D31 | OA90-R | (Germanium) | DX-2772 | OA90-R |
| D32 | OA90-R | (Germanium) | DX-2772 | OA90-R |
| D33 | OA90-R | (Germanium) | DX-2772 | OA90-R |
| D34 | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D35 | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D36 | 1S2076A | (Silicon) | DX-1056 | 1S2076A |

| Ref. No. | Description | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|
| D37 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D38 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D39 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D40 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D41 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D42 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D43 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D44 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D45 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D46 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D47 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D48 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D49 | Zener | HZ6B2L | (Silicon) | DX-2774 | HZ6B2L |
| D50 | Zener | HZ9B2L | (Silicon) | DX-2009 | HZ9B2L |
| D51 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D52 | Zener | HZ11B2L | (Silicon) | DX-2687 | HZ11B2L |
| D53 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D54 | | SR1K-2 | (Silicon) | DX-0475 | SR1K-2 |
| ⚠D55 | Rectifier | 1B4B41 | (Silicon) | DX-2513 | 1B4B41 |
| D56 | | 1S1585 | (Silicon) | DX-0636 | 1S1585 |
| D57 | | 1S1585 | (Silicon) | DX-0636 | 1S1585 |
| D301 | | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D302 | | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D303 | | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D304 | | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D305 | Varactor | 1T25(5/6/7) | (Silicon) | DX-2775 | 1T25(5/6/7) |
| D306 | Varactor | 1T25(5/6/7) | (Silicon) | DX-2775 | 1T25(5/6/7) |
| D307 | Varactor | 1T25(5/6/7) | (Silicon) | DX-2775 | 1T25(5/6/7) |
| D308 | Varactor | 1T25(5/6/7) | (Silicon) | DX-2775 | 1T25(5/6/7) |
| D309 | Varactor | 1SV89 | (Silicon) | DX-0139 | 1SV89 |
| D501 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D502 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D503 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D504 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D505 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D506 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D507 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D508 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D509 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D510 | Not used | | | | |
| D511 | Not used | | | | |
| D512† | Not used | | | | |
| D513 | Not used | | | | |
| D514 | Not used | | | | |
| D515 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D701 | LED | TLR-208 | | L-0066 | TLR-208 |

† See Appendix (page 54) for ITI models.

## INTEGRATED CIRCUITS

| Ref. No. | Description | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|
| IC1 | KB4419A | (IF Amp/Det) | (Bipolar) Linear | MX-7474 | KB4419A |
| IC2 | TK10420 | (IF Amp/Quad/Det) | (Bipolar) Linear | MX-4012 | TK10420 |
| IC3 | HD14011BP | (Switching) | (C-MOS) Logic | MX-5444 | HD14011B |
| IC4 | HD14066BP | (Switching/Mute) | (C-MOS) | MX-5805 | HD14066BP |
| IC5 | μPC324C | (Amp) | (Bipolar) | MX-4373 | μPC324C |
| IC6 | μPC324C | (Zeromatic Cont) | (Bipolar) | MX-4373 | μPC324C |
| IC7 | TDA1905 | (Audio Amp) | (Bipolar) | MX-6439 | TDA1905 |
| IC8 | HA17805P/ TA78005AP | (Voltage Regulator) | (Bipolar) | MX-4760 | HA17805P/ TA78005AP |
| IC9 | S-81250HG | (Voltage Regulator) | (C-MOS) | MX-7475 | S-81250HG |
| IC301 | MC145158 | (PLL) | (C-MOS) | MX-4014 | MC145158 |
| IC302 | CX7925B | (PLL/Pre-Scaler) | (N-MOS) | MX-6967 | CX7925B |
| IC303 | TD6127AP | (Pre-Scaler) | (Bipolar) | MX-7476 | TD6127AP |
| IC304 | TD6105AP | (Pre-Scaler) | (Bipolar) | MX-7477 | TD6105AP |
| IC305 | TA78L005AP | (Voltage Regulator) | (Bipolar) | MX-6487 | TA78L005AP |
| IC306 | TA78L005AP | (Voltage Regulator) | (Bipolar) | MX-6487 | TA78L005AP |
| IC501 | SN74LS145/ HD74LS145 | (Decoder) | (Bipolar) | MX-7479 | SN74LS145/ HD74LS145 |
| IC502 | TD62504P | (Driver) | (Bipolar) | MX-5593 | TD62504P |
| IC503 | GRE0327 | (CPU) | (C-MOS) | MX-7478 | GRE0327 |
| IC504 | μPD446G-45/ TC5517CF-20 | (Memory Back Up) | (C-MOS) | MX-7480 | μPD446G-45/ TC5527CF-20 |
| IC701 | μPD7225G-00 | (LCD Controller) | (C-MOS) | MX-7481 | μPD7225G-00 |

## COILS & TRANSFORMERS

| Ref. No. | Description | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|
| L1 | Coil, Trap | (609.5MHz) | CA-1216 | GR-H761 |
| L2 | Not used | | | |
| L3 | Coil, B.P.F | (280MHz to 520MHz) | CA-1219 | 2LNB-253 |
| L4 | Coil, B.P.F | (280MHz to 520MHz) | CA-1219 | 2LNB-253 |
| L5 | Coil, B.P.F | (280MHz to 520MHz) | CA-1219 | 2LNB-253 |
| L6 | Coil, B.P.F | (280MHz to 520MHz) | CA-1219 | 2LNB-253 |
| L7 | Coil, B.P.F | (280MHz to 520MHz) | CA-1219 | 2LNB-253 |
| L8 | Coil, B.P.F | (280MHz to 520MHz) | CA-1219 | 2LNB-253 |
| L9 | Coil, B.P.F | (280MHz to 520MHz) | CA-1219 | 2LNB-253 |
| L10 | Coil, B.P.F | (280MHz to 520MHz) | CA-1219 | 2LNB-253 |
| L11 | Not used | | | |
| L12 | Coil, B.P.F | (174MHz to 279.995MHz) | CA-1220 | 2LNB-252 |
| L13 | Coil, B.P.F | (174MHz to 279.995MHz) | CA-1220 | 2LNB-252 |
| L14 | Coil, B.P.F | (174MHz to 279.995MHz) | CA-1220 | 2LNB-252 |
| L15 | Coil, B.P.F | (174MHz to 279.995MHz) | CA-1220 | 2LNB-252 |
| L16 | Coil, B.P.F | (174MHz to 279.995MHz) | CA-1220 | 2LNB-252 |
| L17 | Coil, B.P.F | (174MHz to 279.995MHz) | CA-1220 | 2LNB-252 |
| L18 | Coil, B.P.F | (174MHz to 279.995MHz) | CA-1220 | 2LNB-252 |
| L19 | Coil, B.P.F | (174MHz to 279.995MHz) | CA-1220 | 2LNB-252 |
| L20 | Not used | | | |
| L21 | Coil, B.P.F | (108MHz to 173.995MHz) | CA-1221 | 3LNB-251 |
| L22 | Coil, B.P.F | (108MHz to 173.995MHz) | CA-1221 | 3LNB-251 |

| Ref. No. | Description | RS Part Number | MFR's Part Number |
|---|---|---|---|
| L23 | Coil, B.P.F (108MHz to 173.995MHz) | CA-1221 | 3LNB-251 |
| L24 | Coil, B.P.F (108MHz to 173.995MHz) | CA-1221 | 3LNB-251 |
| L25 | Coil, B.P.F (108MHz to 173.995MHz) | CA-1221 | 3LNB-251 |
| L26 | Coil, B.P.F (108MHz to 173.995MHz) | CA-1221 | 3LNB-251 |
| L27 | Coil, B.P.F (108MHz to 173.995MHz) | CA-1221 | 3LNB-251 |
| L28 | Coil, B.P.F (108MHz to 173.995MHz) | CA-1221 | 3LNB-251 |
| L29 | Not used | | |
| L30 | Coil, B.P.F (68MHz to 107.995MHz) | CA-1222 | 4LNB-250 |
| L31 | Coil, B.P.F (68MHz to 107.995MHz) | CA-1222 | 4LNB-250 |
| L32 | Coil, B.P.F (68MHz to 107.995MHz) | CA-1222 | 4LNB-250 |
| L33 | Coil, B.P.F (68MHz to 107.995MHz) | CA-1222 | 4LNB-250 |
| L34 | Coil, B.P.F (68MHz to 107.995MHz) | CA-1222 | 4LNB-250 |
| L35 | Coil, B.P.F (68MHz to 107.995MHz) | CA-1222 | 4LNB-250 |
| L36 | Coil, B.P.F (68MHz to 107.995MHz) | CA-1222 | 4LNB-250 |
| L37 | Coil, B.P.F (68MHz to 107.995MHz) | CA-1222 | 4LNB-250 |
| L38 | Not used | | |
| L39 | Coil, B.P.F (40MHz to 67.995MHz) | CA-1223 | 4LNB-249 |
| L40 | Coil, B.P.F (40MHz to 67.995MHz) | CA-1223 | 4LNB-249 |
| L41 | Coil, B.P.F (40MHz to 67.995MHz) | CA-1223 | 4LNB-249 |
| L42 | Coil, B.P.F (40MHz to 67.995MHz) | CA-1223 | 4LNB-249 |
| L43 | Coil, B.P.F (40MHz to 67.995MHz) | CA-1223 | 4LNB-249 |
| L44 | Coil, B.P.F (40MHz to 67.995MHz) | CA-1223 | 4LNB-249 |
| L45 | Coil, B.P.F (40MHz to 67.995MHz) | CA-1223 | 4LNB-249 |
| L46 | Coil, Choke 10μH | CA-9828 | LAL03NA100K |
| L47 | Not used | | |
| L48 | Coil, B.P.F (25MHz to 39.995MHz) | CA-8513 | LAL03NAR33M |
| L49 | Coil, B.P.F (25MHz to 39.995MHz) | CA-8513 | LAL03NAR33M |
| L50 | Coil, B.P.F (25MHz to 39.995MHz) | CA-8513 | LAL03NAR33M |
| L51 | Coil, B.P.F (25MHz to 39.995MHz) | CA-8513 | LAL03NAR33M |
| L52 | Coil, B.P.F (25MHz to 39.995MHz) | CA-8513 | LAL03NAR33M |
| L53 | Coil, B.P.F (25MHz to 39.995MHz) | CA-8513 | LAL03NAR33M |
| L54 | Not used | | |
| L55 | Coil, Trap (609.5MHz) | CA-1216 | GR-H761 |
| L56 | Coil, D.B.M | CA-1224 | 2LNM-258 |
| L57 | Coil, D.B.M | CA-1224 | 2LNM-258 |
| L58 | Coil, Choke | SB-2119 | 2LN0-256 |
| L59 | Coil, 1st IF | CA-1217 | GR-H763 |
| L60 | Coil, Trap (397.5MHz) | CA-1218 | GR-H762 |
| L61 | Coil, Choke 0.68μH | CB-2116 | LAL03NAR68M |
| L62 | Coil, Choke 2.2mH | CB-2118 | FL5HS222J-09 |
| L63 | Coil, Choke 1μH | CB-2117 | LAL03NA1R0M |
| L64 | Coil, Choke 100μH | CB-2070 | LAL03NA101K |
| L65 | Coil, Choke | CA-3182 | 3B037 |
| L66 | Stripline on P.C.B | | |
| L67 | Stripline on P.C.B | | |
| L68 | Stripline on P.C.B | | |
| L69 | Stripline on P.C.B | | |
| L70 | Stripline on P.C.B | | |
| L71 | Coil, Choke 1μH | CB-2117 | LAL03NA1R0M |
| L301 | Coil, Choke 10μH | CA-9828 | LAL03NA100K |
| L302 | Coil, Choke 10μH | CA-9828 | LAL03NA100K |
| L303 | Coil, Choke 10μH | CA-9828 | LAL03NA100K |
| L304 | Low-pass Filter | CA-1215 | 2.5LBN-257 |
| L305 | Low-pass Filter | CA-1215 | 2.5LNB-257 |
| L306 | Coil, Choke 10μH | CA-9828 | LAL03NA100K |
| L307 | Coil, Choke 10μH | CA-9828 | LAL03NA100K |

| Ref. No. | Description | RS Part Number | MFR's Part Number |
|---|---|---|---|
| L308 | Coil, Choke 0.33μH | CB-2120 | FL3HR33K |
| L309 | Coil, Choke | CB-2122 | 2LNO-254 |
| L310 | Coil, Choke 0.33μH | CB-2120 | FL3HR33K |
| L311 | Coil, Choke | CB-2123 | 2LNO-255 |
| L312 | Coil, Choke | CB-2124 | 2LNO-253 |
| L313 | Coil, Choke 100μH | CB-2070 | LAL03NA101K |
| L314 | Coil, Choke 100μH | CB-2070 | LAL03NA101K |
| L315 | Coil, Choke 100μH | CB-2070 | LAL03NA101K |
| L316 | Coil, Choke 100μH | CB-2070 | LAL03NA101K |
| L317 | Coil, Choke | CB-2124 | 2LNO-253 |
| L318 | Coil, Choke 10μH | CB-2071 | FL3H100K |
| L319 | Coil, Choke 100μH | CB-2070 | LAL03NA101K |
| L320 | Coil, Choke 100μH | CB-2070 | LAL04NA101K |
| L321 | Coil, Choke 1μH | CB-2117 | LAL03NA1R0M |
| L322 | Coil, Choke 1μH | CB-2117 | LAL03NA1R0M |
| L323 | Low-pass Filter, Stripline on P.C.B | | |
| L324 | Low-pass Filter, Stripline on P.C.B | | |
| L325 | Low-pass Filter, Stripline on P.C.B | | |
| L326 | Low-pass Filter, Stripline on P.C.B | | |
| L327 | High-pass Filter, Stripline on P.C.B | | |
| L328 | High-pass Filter, Stripline on P.C.B | | |
| L329 | High-pass Filter, Stripline on P.C.B | | |
| L330 | High-pass Filter, Stripline on P.C.B | | |
| L501 | Coil, Choke 100μH | | LAL03KH101K |
| L502 | Coil, Choke 100μH | | LAL03KH101K |
| L503 | Coil, Choke 100μH | | LAL03KH101K |
| T1 | Coil, 2nd IF | CA-1211 | GR-N769 |
| T2 | Coil, 2nd IF (WFM Band) | CA-1212 | GR-N764 |
| T3 | Coil, 2nd IF | CA-1212 | GR-N764 |
| T4 | Coil, 3rd IF | CA-7246 | GR-A470033 |
| T5 | Coil, 3rd IF | CA-7246 | GR-A470033 |
| T6 | Coil, Quadrature DET. (WFM Band), 10.7MHz | CA-1213 | GR-A793 |
| T7 | Coil, 3rd IF (AM Band) | CA-9882 | GR-D681 |
| T8 | Coil, 3rd IF (AM Band) | CA-9883 | GR-D682 |
| T9 | Coil, 2nd IF (AM, NFM Band) | | GR-N797 |
| T10 | Coil, Filter | | GR-N797 |
| T11 | Coil, 2nd IF (AM, NFM Band) | | GR-N797 |
| T12 | Coil, 2nd IF (AM, NFM Band) | CA-1212 | GR-N764 |
| T13 | Coil, Quadrature DET. (NFM Band) | CA-1214 | GR-P792 |
| T14 | DC-DC Converter, Transformer | CA-1215 | GE-84D-5242 |
| T701 | DC-AC Converter, Transformer | TB-0126 | N19-5N75TK |
| ⚠T801† | Transformer, Power | TA-0127 | GE-85D-5667 |

† See Appendix (page 54) for ITI models.

**TRANSISTORS**

| Ref. No. | Description | RS Part Number | MFR's Part Number |
|---|---|---|---|
| Q1 | 2SC2458(GR) (NPN) AGC. Cont. | 2SC2458GR | 2SC2458(GR) |
| Q2 | 2SC3356 (NPN) | 2SC-3356 | 2SC3356 |
| Q3 | 2SC3356 (NPN) | 2SC-3356 | 2SC3356 |
| Q4 | 2SC3356 (NPN) | 2SC-3356 | 2SC3356 |
| Q5 | 2SC3355 (NPN) | 2SC-3355 | 2SC3355 |
| Q6 | 2SC3355 (NPN) | 2SC-3355 | 2SC3355 |
| Q7 | Not used | | |
| Q8 | 2SC2458(GR) (NPN) | 2SC2458GR | 2SC2458(GR) |

| Ref. No. | Description | RS Part Number | MFR's Part Number |
|---|---|---|---|
| Q9 | 2SC2458(GR) (NPN) | 2SC2458GR | 2SC2458(GR) |
| Q10 | 2SC2458(GR) (NPN) | 2SC2458GR | 2SC2458(GR) |
| Q11 | 2SC2668(Y) (NPN) | 2SC-2268 | 2SC2668(Y) |
| Q12 | 2SC2668(Y) (NPN) | 2SC-2268 | 2SC2668(Y) |
| Q13 | FET 2SK192A(GR) | 2SK-192AGR | 2SK192A(GR) |
| Q14 | 2SC2458(Y) (NPN) | 2SC-2458Y | 2SC2458(Y) |
| Q15 | 2SC2458(GR) (NPN) | 2SC-2458GR | 2SC2458(GR) |
| Q16 | 2SC2458(Y) (NPN) | 2SC-2458Y | 2SC2458(Y) |
| Q17 | 2SC2458(Y) (NPN) | 2SC-2458Y | 2SC2458(Y) |
| Q18 | 2SC2668(Y) (NPN) | 2SC-2668 | 2SC2668(Y) |
| Q19 | 2SC2668(Y) (NPN) | 2SC-2668 | 2SC2668(Y) |
| Q20 | 2SA1048 (PNP) | 2SA-1048 | 2SA1048 |
| Q21 | 2SC2458(GR) (NPN) | 2SC-2458GR | 2SC2458(GR) |
| Q22 | 2SC2458L(GR) (NPN) | 2SC-2458L | 2SC2458L(GR) |
| Q23 | 2SC2458(GR) (NPN) | 2SC-2458GR | 2SC2458(GR) |
| Q24 | 2SC3327/2SD1330S (NPN) | 2SC-3327 | 2SC3327/2SD1330S |
| Q25 | 2SC2458(GR) (NPN) | 2SC-2458GR | 2SC2458(GR) |
| Q26 | 2SC2458L(GR) (NPN) | 2SC-2458L | 2SC2458L(GR) |
| Q27 | RN2005 (PNP) w/Resistor | 1TR-0104 | RN2005 |
| Q28 | RN2005 (PNP) w/Resistor | 1TR-0104 | RN2005 |
| Q29 | RN2005 (PNP) w/Resistor | 1TR-0104 | RN2005 |
| Q30 | 2SC2458(GR) (NPN) | 2SC-2458GR | 2SC2458(GR) |
| Q31 | 2SC2458(GR) (NPN) | 2SC-2458GR | 2SC2458(GR) |
| Q32 | 2SD1406(GR) (NPN) | 2SD-1406GR | 2SD1406(GR) |
| Q33 | 2SC1815(GR) (NPN) | 2SC-1815GR | 2SC1815(GR) |
| Q34 | 2SC2458(GR) (NPN) | 2SC-2458GR | 2SC2458(GR) |
| Q301 | RN2005 (PNP) w/Resistor | 1TR-0104 | RN2005 |
| Q302 | RN2005 (PNP) w/Resistor | 1TR-0104 | RN2005 |
| Q303 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q304 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q305 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q306 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q307 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q308 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q309 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q310 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q311 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q312 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q313 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q314 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q315 | RN2005 (PNP) w/Resistor | 1TR-0104 | RN2005 |
| Q316 | RN2005 (PNP) w/Resistor | 1TR-0104 | RN2005 |
| Q317 | Not used | | |
| Q318 | FET 2SK184(GR) | 2SK-184GR | 2SK184(GR) |
| Q319 | 2SC2458L(GR) (NPN) | 2SC-2458L | 2SC2458L(GR) |
| Q501 | RN2201 (PNP) w/Resistor | | RN2201 |
| Q502 | RN2201 (PNP) w/Resistor | | RN2201 |
| Q503 | RN2201 (PNP) w/Resistor | | RN2201 |
| Q504 | RN2201 (PNP) w/Resistor | | RN2201 |
| Q505 | RN2201 (PNP) w/Resistor | | RN2201 |
| Q506 | RN2201 (PNP) w/Resistor | | RN2201 |
| Q507 | RN2201 (PNP) w/Resistor | | RN2201 |
| Q701 | 2SC945(QA) (NPN) | | 2SC945(QA) |

## RESISTORS

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| R1 | Not used | | | | | |
| R2 | Chip | 100 ohm | 1/8W | ±5% | ND-0132EBN | ERJ-8GCYJ101 |
| R3 | Chip | 82 ohm | 1/8W | ±5% | ND-0122EBN | ERJ-8GCYJ820 |
| R4 | Chip | 100 ohm | 1/8W | ±5% | ND-0132EBN | ERJ-8GCYJ101 |
| R5 | Chip | 100k ohm | 1/8W | ±5% | ND-0371EBN | ERJ-8GCYJ104 |
| R6 | Chip | 10k ohm | 1/8W | ±5% | ND-0281EBN | ERJ-8GCYJ103 |
| R7 | Chip | 3.3k ohm | 1/8W | ±5% | ND-0230EBN | ERJ-8GCYJ332 |
| R8 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R9 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R10 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R11 | Chip | 47k ohm | 1/8W | ±5% | ND-0340EBN | ERJ-8GCYJ473 |
| R12 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R13 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R14 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R15 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R16 | Chip | 100k ohm | 1/8W | ±5% | ND-0371EBN | ERJ-8GCYJ104 |
| R17 | Chip | 3.3k ohm | 1/8W | ±5% | ND-0230EBN | ERJ-8GCYJ332 |
| R18 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R19 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R20 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R21 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R22 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R23 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R24 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R25 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R26 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R27 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R28 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R29 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R30 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R31 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R32 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R33 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R34 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R35 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R36 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R37 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R38 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R39 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R40 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R41 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R42 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R43 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R44 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R45 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R46 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R47 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R48 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R49 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R50 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R51 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R52 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R53 | Chip | 270 ohm | 1/8W | ±5% | ND-0155EBN | ERJ-8GCYJ271 |
| R54 | Chip | 2.2k ohm | 1/8W | ±5% | ND-0216EBN | ERJ-8GCYJ222 |
| R55 | Chip | 470 ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ471 |

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| R56 | Chip | 22 ohm | 1/8W | ±5% | ND-0078EBN | ERJ-8GCYJ220 |
| R57 | Chip | 820 ohm | 1/8W | ±5% | ND-0187EBN | ERJ-8GCYJ821 |
| R58 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R59 | Chip | 680 ohm | 1/8W | ±5% | ND-0183EBN | ERJ-8GCYJ681 |
| R60 | Chip | 330 ohm | 1/8W | ±5% | ND-0159EBN | ERJ-8GCYJ331 |
| R61 | Chip | 56 ohm | 1/8W | ±5% | ND-0107EBN | ERJ-8GCYJ560 |
| R62 | Chip | 680 ohm | 1/8W | ±5% | ND-0183EBN | ERJ-8GCYJ681 |
| R63 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R64 | Chip | 470 ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ471 |
| R65 | Chip | 100 ohm | 1/8W | ±5% | ND-0132EBN | ERJ-8GCYJ101 |
| R66 | Chip | 47 ohm | 1/8W | ±5% | ND-0099EBN | ERJ-8GCYJ470 |
| R67 | Chip | 56 ohm | 1/8W | ±5% | ND-0107EBN | ERJ-8GCYJ560 |
| R68 | Chip | 1.5k ohm | 1/8W | ±5% | ND-0206EBN | ERJ-8GCYJ152 |
| R69 | Chip | 2.2k ohm | 1/8W | ±5% | ND-0216EBN | ERJ-8GCYJ222 |
| R70 | Chip | 330 ohm | 1/8W | ±5% | ND-0159EBN | ERJ-8GCYJ331 |
| R71 | Chip | 100 ohm | 1/8W | ±5% | ND-0132EBN | ERJ-8GCYJ101 |
| R72 | Chip | 56 ohm | 1/8W | ±5% | ND-0107EBN | ERJ-8GCYJ560 |
| R73 | Chip | 47k ohm | 1/8W | ±5% | ND-0340EBN | ERJ-8GCYJ473 |
| R74 | Chip | 220k ohm | 1/8W | ±5% | ND-0396EBN | ERJ-8GCYJ224 |
| R75 | Chip | 56 ohm | 1/8W | ±5% | ND-0107EBN | ERJ-8GCYJ560 |
| R76 | Chip | 330 ohm | 1/8W | ±5% | ND-0159EBN | ERJ-8GCYJ331 |
| R77 | Chip | 47 ohm | 1/8W | ±5% | ND-0099EBN | ERJ-8GCYJ470 |
| R78 | Chip | 220 ohm | 1/8W | ±5% | ND-0149EBN | ERJ-8GCYJ221 |
| R79 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R80 | Chip | 56 ohm | 1/8W | ±5% | ND-0107EBN | ERJ-8GCYJ560 |
| R81 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R82 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R83 | Carbon film | 120k ohm | 1/6W | ±5% | N-0375ECC | RD16U124J |
| R84 | Carbon film | 15k ohm | 1/6W | ±5% | N-0297ECC | RD16U153J |
| R85 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R86 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R87 | Carbon film | 27k ohm | 1/6W | ±5% | N-0316ECC | RD16U273J |
| R88 | Carbon film | 56k ohm | 1/6W | ±5% | N-0345ECC | RD16U563J |
| R89 | Carbon film | 5.6k ohm | 1/6W | ±5% | N-0257ECC | RD16U562J |
| R90 | Carbon film | 2.2k ohm | 1/6W | ±5% | N-0216ECC | RD16U222J |
| R91 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R92 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R93 | Carbon film | 220k ohm | 1/6W | ±5% | N-0396ECC | RD16U224J |
| R94 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R95 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R96 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R97 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16U221J |
| R98 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R99 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R100 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R101 | Carbon film | 6.8k ohm | 1/6W | ±5% | N-0262ECC | RD16U682J |
| R102 | Carbon film | 2.2k ohm | 1/6W | ±5% | N-0216ECC | RD16U222J |
| R103 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R104 | Carbon film | 220k ohm | 1/6W | ±5% | N-0396ECC | RD16U224J |
| R105 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16S221J |
| R106 | Carbon film | 10 ohm | 1/6W | ±5% | N-0063ECC | RD16U100J |
| R107 | Carbon film | 330 ohm | 1/6W | ±5% | N-0159ECC | RD16U331J |
| R108 | Carbon film | 120 ohm | 1/6W | ±5% | N-0136ECC | RD16U121J |
| R109 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R110 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R111 | Not used | | | | | |
| R112 | Carbon film | 1M ohm | 1/6W | ±5% | N-0445ECC | RD16U105J |

| Ref. No. | Descriptoin | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| R113 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R114 | Carbon film | 22k ohm | 1/6W | ±5% | N-0311ECC | RD16U223J |
| R115 | Carbon film | 470 ohm | 1/6W | ±5% | N-0169ECC | RD16U471J |
| R116 | Carbon film | 270k ohm | 1/6W | ±5% | N-0402ECC | RD16U274J |
| R117 | Carbon film | 15k ohm | 1/6W | ±5% | N-0297ECC | RD16S153J |
| R118 | Carbon film | 470 ohm | 1/6W | ±5% | N-0169ECC | RD16U471J |
| R119 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R120 | Carbon film | 180k ohm | 1/6W | ±5% | N-0387ECC | RD16U184J |
| R121 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R122 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R123 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R124 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R125 | Carbon film | 220k ohm | 1/6W | ±5% | N-0396ECC | RD16U224J |
| R126 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R127 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R128 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R129 | Carbon film | 2.2k ohm | 1/6W | ±5% | N-0216ECC | RD16U222J |
| R130 | Carbon film | 390k ohm | 1/6W | ±5% | N-0414ECC | RD16S394J |
| R131 | Carbon film | 3.3k ohm | 1/6W | ±5% | N-0230ECC | RD16S332J |
| R132 | Carbon film | 470 ohm | 1/6W | ±5% | N-0169ECC | RD16U471J |
| R133 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R134 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R135 | Carbon film | 390k ohm | 1/6W | ±5% | N-0414ECC | RD16S394J |
| R136 | Carbon film | 5.6k ohm | 1/6W | ±5% | N-0257ECC | RD16S562J |
| R137 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R138 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R139 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16S101J |
| R140 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16S333J |
| R141 | Carbon film | 1.5k ohm | 1/6W | ±5% | N-0206ECC | RD16U152J |
| R142 | Carbon film | 3.3k ohm | 1/6W | ±5% | N-0230ECC | RD16U332J |
| R143 | Carbon film | 1.5k ohm | 1/6W | ±5% | N-0206ECC | RD16U152J |
| R144 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R145 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R146 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R147 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R148 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R149 | Carbon film | 2.2k ohm | 1/6W | ±5% | N-0216ECC | RD16U222J |
| R150 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R151 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R152 | Carbon film | 1M ohm | 1/6W | ±5% | N-0445ECC | RD16U105J |
| R153 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R154 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R155 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R156 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R157 | Carbon film | 8.2k ohm | 1/6W | ±5% | N-0271ECC | RD16U822J |
| R158 | Carbon film | 1.5k ohm | 1/6W | ±5% | N-0206ECC | RD16U152J |
| R159 | Carbon film | 2.7k ohm | 1/6W | ±5% | N-0224ECC | RD16U272J |
| R160 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R161 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R162 | Carbon film | 3.3k ohm | 1/6W | ±5% | N-0230ECC | RD16U332J |
| R163 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R164 | Carbon film | 2.7k ohm | 1/6W | ±5% | N-0224ECC | RD16U272J |
| R165 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R166 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R167 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R168 | Carbon film | 5.6k ohm | 1/6W | ±5% | N-0257ECC | RD16U562J |
| R169 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| R170 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R171 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R172 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R173 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R174 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R175 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R176 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R177 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R178 | Carbon film | 1M ohm | 1/6W | ±5% | N-0445ECC | RD16U105J |
| R179 | Carbon film | 1.5k ohm | 1/6W | ±5% | N-0206ECC | RD16U152J |
| R180 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R181 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R182 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R183 | Carbon film | 220k ohm | 1/6W | ±5% | N-0396ECC | RD16U224J |
| R184 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R185 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R186 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R187 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R188 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R189 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R190 | Carbon film | 15k ohm | 1/6W | ±5% | N-0297ECC | RD16U153J |
| R191 | Carbon film | 68k ohm | 1/6W | ±5% | N-0354ECC | RD16U683J |
| R192 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R193 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R194 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R195 | Carbon film | 22k ohm | 1/6W | ±5% | N-0311ECC | RD16U223J |
| R196 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R197 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R198 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R199 | Carbon film | 82k ohm | 1/6W | ±5% | N-0360ECC | RD16U823J |
| R200 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R201 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R202 | Carbon film | 22k ohm | 1/6W | ±5% | N-0311ECC | RD16U223J |
| R203 | Carbon film | 22k ohm | 1/6W | ±5% | N-0311ECC | RD16U223J |
| R204 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R205 | Carbon film | 22k ohm | 1/6W | ±5% | N-0311ECC | RD16U223J |
| R206 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R207 | Carbon film | 1M ohm | 1/6W | ±5% | N-0445ECC | RD16U105J |
| R208 | Carbon film | 2.7k ohm | 1/6W | ±5% | N-0224ECC | RD16U272J |
| R209 | Carbon film | 470 ohm | 1/6W | ±5% | N-0169ECC | RD16U471J |
| R210 | Carbon film | 22k ohm | 1/6W | ±5% | N-0311ECC | RD16U223J |
| R211 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R212 | Carbon film | 1M ohm | 1/6W | ±5% | N-0445ECC | RD16U105J |
| R213 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R214† | Metal film | 3.3 ohm | 1W | ±5% | N-0037EGE | RNS1.0-3R3J |
| R215 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16S103J |
| R216 | Carbon film | 47 ohm | 1/6W | ±5% | N-0099ECC | RD16S470J |
| R217 | Carbon film | 1 ohm | 1/6W | ±5% | N-0022ECC | RD16U010J |
| R218 | Carbon film | 270 ohm | 1/6W | ±5% | N-0155ECC | RD16U271J |
| R219 | Carbon film | 56k ohm | 1/6W | ±5% | N-0345ECC | RD16U563J |
| R220 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R221 | Carbon film | 470k ohm | 1/6W | ±5% | N-0423ECC | RD16U474J |
| R222 | Carbon film | 180k ohm | 1/6W | ±5% | N-0387ECC | RD16U184J |
| R223 | Carbon film | 2.2M ohm | 1/6W | ±5% | N-0454ECC | RD16U225J |
| R224 | Carbon film | 2.2M ohm | 1/6W | ±5% | N-0454ECC | RD16U225J |
| R225 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R226 | Carbon film | 330 ohm | 1/6W | ±5% | N-0159ECC | RD16U331J |

† See Appendix (page 54) for ITI models.

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| R227 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16U221J |
| R228 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R229 | Carbon film | 15k ohm | 1/6W | ±5% | N-0297ECC | RD16U153J |
| R230 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16S333J |
| R231 | Carbon film | 220k ohm | 1/6W | ±5% | N-0396ECC | RD16U224J |
| R232 | Carbon film | 15k ohm | 1/6W | ±5% | N-0297ECC | RD16U153J |
| R233 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R234 | Carbon film | 5.6k ohm | 1/6W | ±5% | N-0257ECC | RD16U562J |
| R235† | Metal film | 1 ohm | 1W | ±5% | N-0022EGE | RNS1.0-010J |
| R236 | Chip | 3.3k ohm | 1/8W | ±5% | ND-0230EBN | ERJ-8GCYJ332 |
| R237 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R238 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R239 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R240 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R241 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R242 | Chip | 10k ohm | 1/8W | ±5% | ND-0281EBN | ERJ-8GCYJ103 |
| R243 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R244 | Carbon film | 220k ohm | 1/6W | ±5% | N-0396ECC | RD16U224J |
| R245 | Carbon film | 180k ohm | 1/6W | ±5% | N-0387ECC | RD16U184J |
| R246 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R247 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R248 | Carbon film | 220 ohm | 1/4W | ±5% | | ERD-25PJ221 |
| R249 | Carbon film | 220 ohm | 1/4W | ±5% | | ERD-25PJ221 |
| R250 | Carbon film | 220 ohm | 1/4W | ±5% | | ERD-25PJ221 |
| R251 | Carbon film | 220 ohm | 1/4W | ±5% | | ERD-25PJ221 |
| R252 | Carbon film | 220 ohm | 1/4W | ±5% | | ERD-25PJ221 |
| R253 | Carbon film | 220 ohm | 1/4W | ±5% | | ERD-25PJ221 |
| R254 | Carbon film | 220 ohm | 1/4W | ±5% | | ERD-25PJ221 |
| R255 | Chip | 100 ohm | 1/8W | ±5% | ND-0132EBN | ERJ-8GCYJ101 |
| R256 | Carbon film | 1 ohm | 1/2W | ±5% | N-0022EFE | RNF1/2S1R0J |
| R301 | Carbon film | 2.2k ohm | 1/6W | ±5% | N-0216ECC | RD16U222J |
| R302 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R303 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16U221J |
| R304 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R305 | Carbon film | 2.2k ohm | 1/6W | ±5% | N-0216ECC | RD16U222J |
| R306 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R307 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R308 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16U221J |
| R309 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R310 | Carbon film | 10 ohm | 1/6W | ±5% | N-0063ECC | RD16U100J |
| R311 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R312 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R313 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R314 | Carbon film | 10 ohm | 1/6W | ±5% | N-0063ECC | RD16U100J |
| R315 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R316 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R317 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R318 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16U221J |
| R319 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R320 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16U221J |
| R321 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R322 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R323 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R324 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R325 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16U221J |
| R326 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R327 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16U221J |

† See Appendix (page 54) for ITI models.

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| R328 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R329 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R330 | Carbon film | 470 ohm | 1/6W | ±5% | N-0169ECC | RD16U471J |
| R331 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16U221J |
| R332 | Chip | 2.2k ohm | 1/8W | ±5% | ND-0216EBN | ERJ-8GCYJ222 |
| R333 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R334 | Chip | 100k ohm | 1/8W | ±5% | ND-0371EBN | ERJ-8GCYJ104 |
| R335 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R336 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16U221J |
| R337 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R338 | Carbon film | 470 ohm | 1/6W | ±5% | N-0169ECC | RD16U471J |
| R339 | Chip | 2.2k ohm | 1/8W | ±5% | ND-0216EBN | ERJ-8GCYJ222 |
| R340 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R341 | Chip | 100k ohm | 1/8W | ±5% | ND-0371EBN | ERJ-8 GCYJ104 |
| R342 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R343 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R344 | Not used | | | | | |
| R345 | Carbon film | 470 ohm | 1/6W | ±5% | N-0169ECC | RD16U471J |
| R346 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R347 | Carbon film | 8.2k ohm | 1/6W | ±5% | N-0271ECC | RD16U822J |
| R348 | Carbon film | 330 ohm | 1/6W | ±5% | N-0159ECC | RD16U331J |
| R349 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R350 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R351 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R352 | Chip | 15k ohm | 1/8W | ±5% | ND-0297EBN | ERJ-8GCYJ153 |
| R353 | Carbon film | 470 ohm | 1/6W | ±5% | N-0169ECC | RD16U471J |
| R354 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R355 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R356 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R357 | Carbon film | 2.2k ohm | 1/6W | ±5% | N-0216ECC | RD16U222J |
| R358 | Carbon film | 2.2k ohm | 1/6W | ±5% | N-0216ECC | RD16U222J |
| R359 | Not used | | | | | |
| R360 | Carbon film | 5.6k ohm | 1/6W | ±5% | N-0257ECC | RD16U562J |
| R361 | Not used | | | | | |
| R362 | Not used | | | | | |
| R363 | Not used | | | | | |
| R364 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R365 | Carbon film | 15k ohm | 1/6W | ±5% | N-0297ECC | RD16U153J |
| R366 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R367 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R368 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R369 | Carbon film | 2.2k ohm | 1/6W | ±5% | N-0216ECC | RD16U222J |
| R370 | Carbon film | 820 ohm | 1/6W | ±5% | | RD16U821J |
| R371 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R501 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R502 | Carbon film | 1M ohm | 1/6W | ±5% | N-0445ECC | RD16U105J |
| R503 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R504 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R505 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R506 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R507 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R508 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R509 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R510 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R511 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R512 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R513 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| R514 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R515 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R516 | Carbon film | 560k ohm | 1/6W | ±5% | | RD16U564J |
| R517 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R518 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R519 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R520 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R521 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R522 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R701 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R702 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R703 | Carbon film | 10 ohm | 1/6W | ±5% | N-0063ECC | RD16U100J |
| R704 | Carbon film | 1.2k ohm | 1/6W | ±5% | | RD16U122J |
| R705 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R706 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R707 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R708 | Carbon film | 180k ohm | 1/6W | ±5% | N-0387ECC | RD16U184J |
| R709 | Carbon film | 22 ohm | 1/6W | ±5% | | RD16U220J |
| R710 | Carbon film | 150 ohm | 1/6W | ±5% | | RD16U151J |
| R711 | Carbon film | 6.8k ohm | 1/6W | ±5% | N-0262ECC | RD16U682J |
| R801† | Solid | 1.8M ohm | 1/2W | ±10% | N-0521FFB | ERC-12GK185 |

† See Appendix (page 54) for ITI models.

## CRYSTALS & FILTERS

| Ref. No. | Descriptoin | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|
| X1 | Crystal | TC-43 type | 37.8 MHz | CX-0551 | 37.8 MHz |
| X2 | Crystal | TC-43 type | 48.045 MHz | CX-0552 | 48.045 MHz |
| X301 | Crystal | TX1824G-3 type | 10 MHz | CX-0480 | 10 MHz |
| CX501 | Ceramic Oscillator | | 7.37 MHz | | CST7.37MT |
| XF1 | Crystal Filter | MF48RB type | 48.5 MHz | C-1923 | 48.5 MHz |
| XF2 | Crystal Filter | MF48RB type | 48.5 MHz | C-1923 | 48.5 MHz |
| CF1 | Ceramic Filter | | 10.7 MHz | C-1924 | SFJ10.7 MA2-A |
| CF2 | Ceramic Filter | | 455 kHz | C-1044 | CFW455D |

## VARIABLE RESISTORS

| Ref. No. | Description | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|
| VR801 | Pot. Volume w/Switch | 50k ohm (A) | P-7787 | 5M1411-50KA-20A |
| VR802 | Pot. Squelch | 10k ohm (C) | P-8029 | K1611008TE-10KC-20 |

| MISCELLANEOUS | | | | |
|---|---|---|---|---|
| Ref. No. | Description | | RS Part Number | MFR's Part Number |
| CN-1 | Pin, connector | 3 Pin Male | J-5678 | PI22A03M |
| CN-2 | Pin, connector | 4 Pin Male | J-4050 | PI22A04M |
| CN-3 | Pin, connector | 2 Pin Male | J-4051 | PI22A02M |
| CN-4 | Pin, connector | 3 Pin Male | J-5678 | PI22A03M |
| CN-5 | Pin, connector | 2 Pin Male | J-4051 | PI22A02M |
| CN-6 | Pin, connector | 3 Pin Male | J-5678 | PI22A03M |
| CN-501 | Pin, connector | 9 Pin Male | | PI22A09M |
| CN-502 | Pin, connector | 13 Pin Male | | PI22A13M |
| CN-503 | Pin, connector | 8 Pin Male | | PI22A08M |
| CN-504 | Pin, connector | 15 Pin Male | | PI22A15M |
| CN-505 | Pin, connector | 11 Pin Male | | PI22A11M |
| EL701 | Electro Luminescence | | L-2082 | GE-85D-6011 |
| J1 | Jack | | J-5939 | TMP-J01X-V1 |
| J2 | Jack | | J-5939 | TMP-J01X-V1 |
| J3 | Jack, Tape Out | | J-1820 | JPJ0573-01-010 |
| J4 | Jack Ext. Speaker | | J-1821 | S-G8036 |
| J5 | Jack, DC | | J-1140 | HEC0470-01-630 |
| J6 | Jack, Antenna | | J-0085 | GE-85D-5383 |
| J801 | Jack, Head Phone | | J-1824 | S-G8022#2 |
| LCD701 | LCD | | | FTD-8200P |
| SW1 | Switch, slide (Attenuator) | | S-3627 | SSFZUB22-07 |
| SW501 | Switch, push (Reset) | | | SKHHLM |
| SW701 | Switch, push (Sound Squelch) | | S-7094 | ESB-64500 type 1 |
| SW702 | Switch, push (Dimmer) | | S-7094 | ESB-64500 type 1 |
| TH-1 | Thermister | | T-1024 | HT-100 |
| TP1 | Pin, test | | | ERD-25TC0 |
| TP2 | Pin, test | | | ERD-25TC0 |
| TP3 | Pin, test | | | ERD-25TC0 |
| TP4 | Pin, test | | | ERD-25TC0 |
| TP5 | Pin, test | | | ERD-25TC0 |
| TP301 | Pin, test | | | ERD-25TC0 |
| TP302 | Pin, test | | | ERD-25TC0 |
| | Antenna, rod | | | GE-86D-6519 |
| | Binder, AC cord | | | NO.5121/W-140 |
| | Binder, cord | | | PLT1M-M/BK-1 |
| | Cord, AC | 6.5 feet (UL) | | GE-86D-6312 |
| | Foot | | | OK15 |
| | Snap, battery w/cable | 1 type, L=250mm | B-0209 | |
| SP801 | Speaker | | SP-5374 | SM-77KY-2 |
| | Strainrelief, Line Cord | | HB-0705 | SR-3P-4 |
| | Switch, push | | S-7093 | SKHHPK |
| | Terminal, solderless | | HB-9616 | 1-SD |
| | Wire Kit | | | #327(A) |

# MECHANICAL PARTS LIST

| Ref. No. | Description | RS Part Number | MFR's Part Number |
|---|---|---|---|
| 1 | Cabinet | Z-1484 | GE-86B-6360 |
| 2 | Chassis | | GE-86A-6359 |
| 3 | PCB Ass'y, Linear | | GA-86D-6316 |
| 4 | Bracket, Antenna Connector | | GE-86D-6362 |
| 5 J6 | Jack, Antenna | J-0085 | GE-85D-5383 |
| 6 | Shield, Antenna | | GE-86D-6381 |
| 7 | Case, IF Shield | | GE-86D-6377 |
| 8 | Case, BPF Shield | | GE-86D-6379 |
| 9 | Top, IF Shield | | GE-86D-6378 |
| 10 | Top, BPF Shield | | GE-86D-6380 |
| 11 | Plate, 1st IF Shield | | GE-86D-6605 |
| 12 | Heat Sink | | GE-86D-6363 |
| 13 | PCB Ass'y, PLL | | GA-86D-6317 |
| 14 | Bottom PLL Shield (A) Filter | | GE-86D-6511 |
| 15 | Bottom PLL Shield (A) VCO | | GE-86D-6510 |
| 16 | Bottom PLL Shield (B) IC | | GE-86D-6513 |
| 17 | Bottom PLL Shield (B) VCO | | GE-86D-6512 |
| 18 | Fiber, PLL Shield (A) Filter | | GE-86D-6515 |
| 19 | Fiber, PLL Shield (A) VCO | | GE-86D-6514 |
| 20 | Fiber, PLL Shield (B) IC | | GE-86D-6517 |
| 21 | Fiber, PLL Shield (B) VCO | | GE-86D-6516 |
| 22 | Case, PLL Shield (A) | | GE-86D-6368 |
| 23 | Case, PLL Shield (B) | | GE-86D-6372 |
| 24 | Case, PLL Shield (C) | | GE-86D-6376 |
| 25 | Top, PLL Shield (A) | | GE-86D-6369 |
| 26 | Top, PLL Shield (B) | | GE-86D-6373 |
| 27 | Plate, PLL Shield (D) VCO | | GE-86D-6528 |
| 28 | PCB Ass'y, Logic | | GA-86D-6318 |
| 29 | Case Logic Shield | | GE-86D-6388 |
| 30 | Top, Logic Shield | | GE-86D-6389 |
| 31 | Fiber, Logic Shield | | GE-86D-6529 |
| 32 T801 | Transformer, Power | TA-0127 | GE-85D-5667 |
| 33 | Box, Battery | DB-0741 | GE-21D-5728 |
| 34 | Cover, Battery Compartment | DB-0094 | GE-79D-0113 |
| 35 | Cushion, Battery | | GE-21D-5795 |
| 36 | Cord, AC 6.5 feet (UL) | W-3388 | GE-86D-6312 |
| 37 SP801 | Speaker 8 ohm 2W | SP-5374 | SM-77KY-2 |
| 38 | Bracket Speaker | | GE-86D-6361 |
| 39 | Mattress, Speaker | | GE-86D-6505 |
| 40 | Escutcheon Ass'y, Front (Non Repairable) | Z-1483 | GA-86D-6385 |
| | Escutcheon, Front | | GE-86A-6354 |
| | Protecter, Escutcheon | | GE-86C-6500 |
| | Window, LCD | | GE-86D-6355 |
| 41 | PCB Ass'y, LCD | | GA-86D-6319 |
| 42 LCD701 | LCD | | FTD-8200P |
| 43 | Electro Luminescence | | GE-85D-6067 |
| 44 | Holder, LCD | | GE-85D-6386 |
| 45 | Cushion, LCD | | GE-85D-6521 |
| 46 | Knob, Dimmer/Sound Squelch | K-1064 | GE-86D-6357 |
| 47 | Shield, LCD | | GE-86D-6364 |
| 48 | Fiber, LCD Shield | | GE-86D-6365 |
| 49 | PCB Ass'y, Keyboard | | GA-86D-6320 |
| 50 | Shield, Keyboard | | GE-86D-6366 |
| 51 | Fiber, Keyboard | | GE-86D-6367 |
| 52 | Plate, Ground | | GE-86D-6509 |
| 53 | Volume, Switch | | 5M1411-50KA-20A |
| 54 | Squelch, Volume | | K1611008TE-10KC-20 |

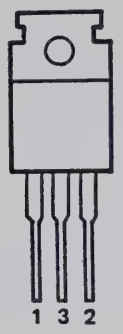
| Ref. No. | Description | RS Part Number | MFR's Part Number |
|---|---|---|---|
| 55 | Jack, Head Phone | J-1824 | S-G8022#2 |
| 56 | Knob, Volume/Squelch | K-1063 | GE-86D-6356 |
| 57 | Antenna, Telescopic | A-0083 | GE-86D-6519 |
| 58 | Foot | F-0054 | OK-15 |
| 59 | Panel, Keybaord | Z-1482 | GE-86D-6358 |
| 60 | Himelon (A) | | GE-86D-6522 |
| 61 | Himelon (B) | | GE-86D-6523 |
| 62 | Himelon (C) | | GE-86D-6524 |
| 63 | Himelon Speaker | | GE-86D-6387 |
| 64 | Screw, Panhead With Washer Ass'y Tind ZU | | PM2.6x5 |
| 65 | Screw, Panhead With Washer Ass'y ZU | | PM3x6 |
| 66 | Screw, Panhead P tight | | PT2.6x5 |
| 67 | Screw, Panhead Tapping | | PT3x6 |
| 68 | Screw, Panhead | | PM3x6 |
| 69 | Screw, Panhead Tapping | | PT2.6x6 |
| 70 | Screw, Panhead P tight | | PT3x8 |
| Ⓐ | Screw, Bindinghead BLK | | BM3x6 |
| 71 | Screw, Bindinghead With Washer Ass'y ZU | | BM3x12 |
| 72 | Screw, Bindinghead | HD-1814 | BM4x8 |
| 73 | Screw, Bindinghead Tapping | | BT3x6 |
| 74 | Screw, Bindinghead | | GE-79D-0541 |
| 75 | Screw, Countersunkhead Machine | HD-2585 | CM3x6 |
| 76 | Washer, External Toothed Lock 3m/m | | ETW 3m/m |
| 77 | Washer, Internal Toothed Lock 3m/m | HD-8966 | ITW 3m/m |
| 78 | Nut, flange serrated | | 3 DIA |
| 79 | Nut, flange serrated | | 4 DIA |
| 80 | Nut | | 7 DIA |
| 81 | Nut, Grommet | | |
| | Hardware Kit | HW-200019 | #327(B) |

# APPENDIX

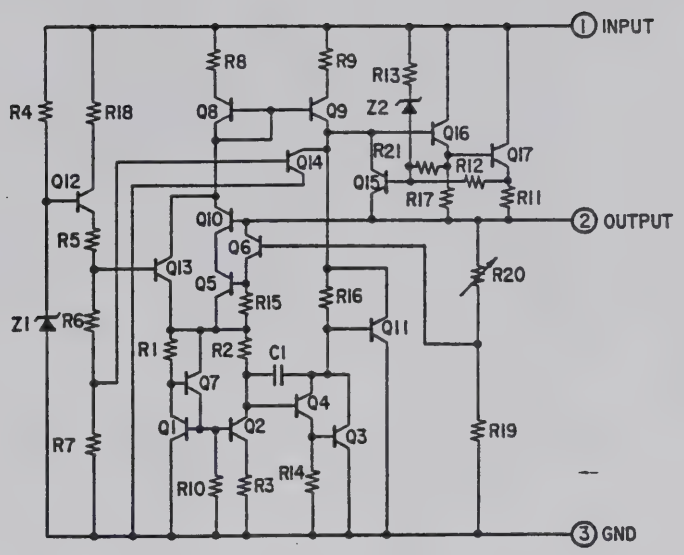
**Variable parts for each model are below.**

| Ref. No. | Description | USA | CANADA | AUSTRALIA | UK |
|---|---|---|---|---|---|
| R214 | Metal Film 3.3 ohm 1W ±0.5% | RNS1.0-3R3J | – | RNS1.0-3R3J | RNS1.0-3R3J |
| | Metal Film 3.3 ohm 1/2W ±0.5% | – | ERQ-12AJ-3R3 | – | – |
| R235 | Metal Film 1 ohm 1W ±0.5% | RSN1.0-010J | – | RNS1.0-010J | RNS1.0-010J |
| | Metal Film 2.2 ohm 1W ±0.5% | – | ERQ-1AJ-2R2 | – | – |
| R801 | Solid Film 1.8M ohm 1/2W ±10% | ERC-12GK-185 | ERC-12GK-185 | Not used | Not used |
| D512 | 1S2076A (Silicon) | Not used | Not used | 1S2076A | 1S2076A |
| T801 | Transformer, Power | GE-85D-5667 | Z1643 | K7087 | K7087 |
| | Cord, AC | GE-86D-6312 | GE-86D-6312 | PZ-ACTF-LD-AS | HAR CLASS II BLK 2m |
| | Strainrelief, Line Cord | SR-3P-4 | SR-3P-4 | SR-5N-4 | SR-4N-4 |
| | Chassis | GE-86A-6359 | GE-86A-6359 | GE-86A-6359A | GE-86A-6359A |

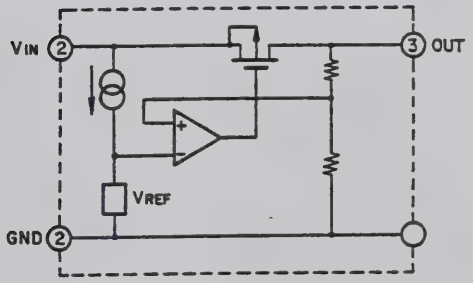
## IC8 TA78005AP or HA17805



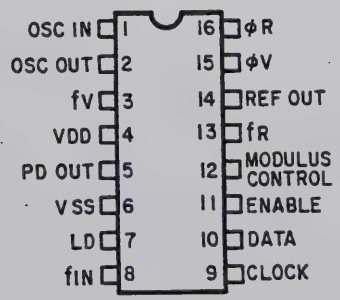

1. INPUT
2. OUTPUT
3. GND

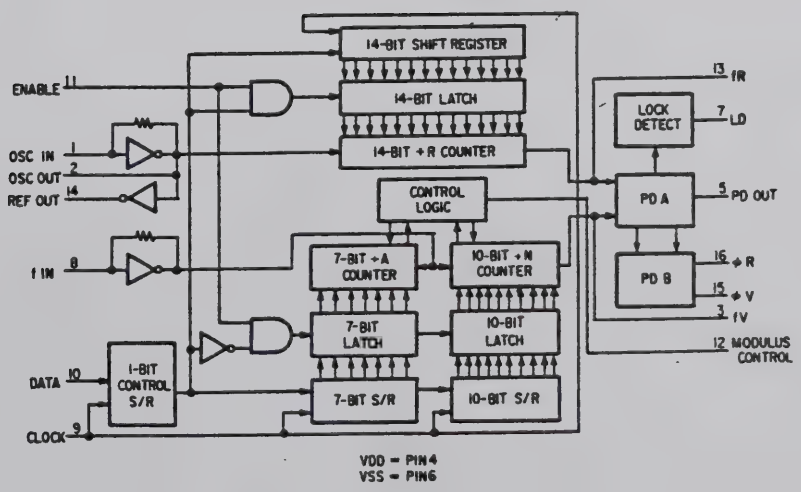



## IC9 S-81250HG

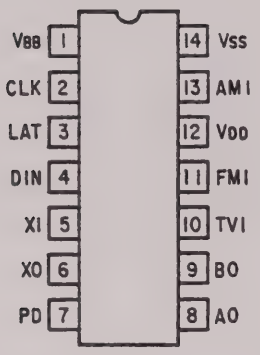



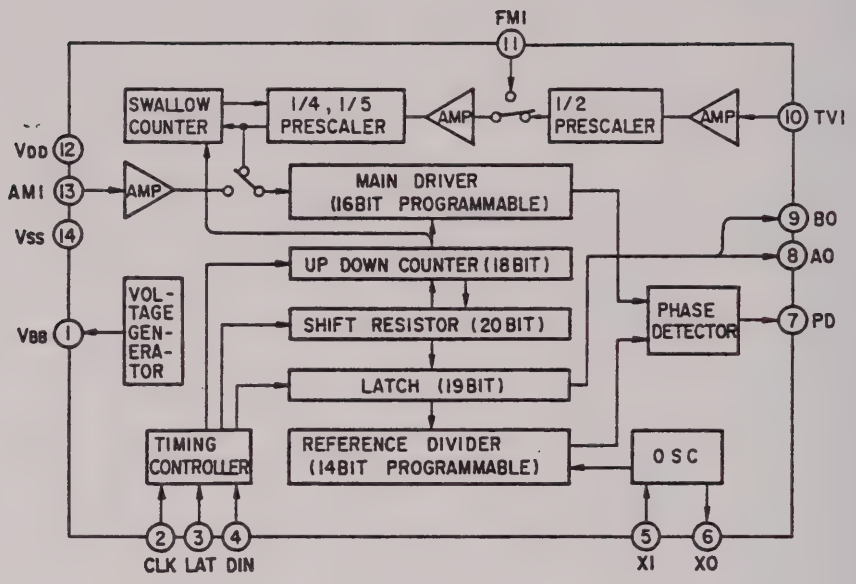

## IC301 MC145158



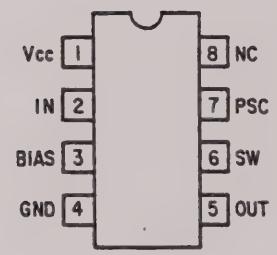



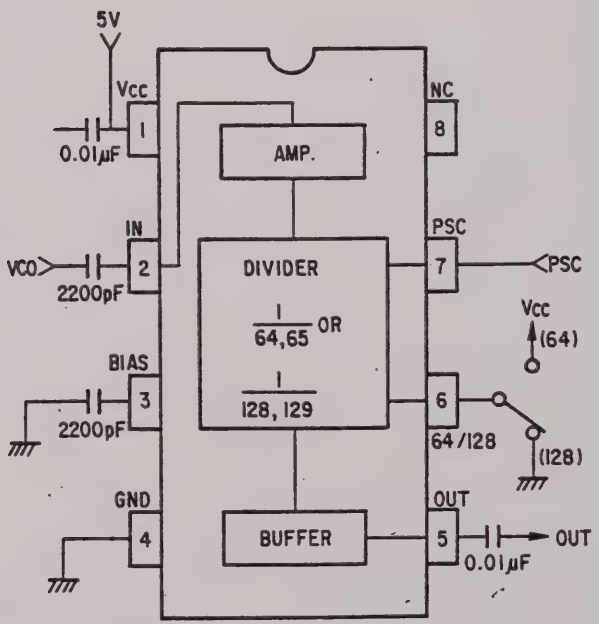
## IC302 CX7925B



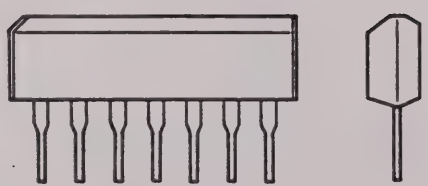



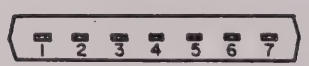

## IC303 TD6127AP

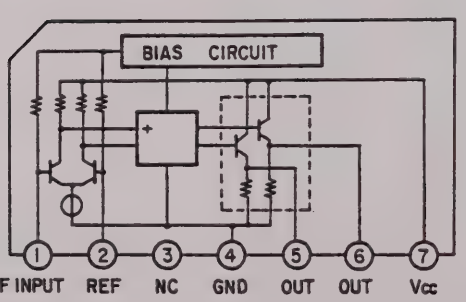



## IC304 TD6105AP

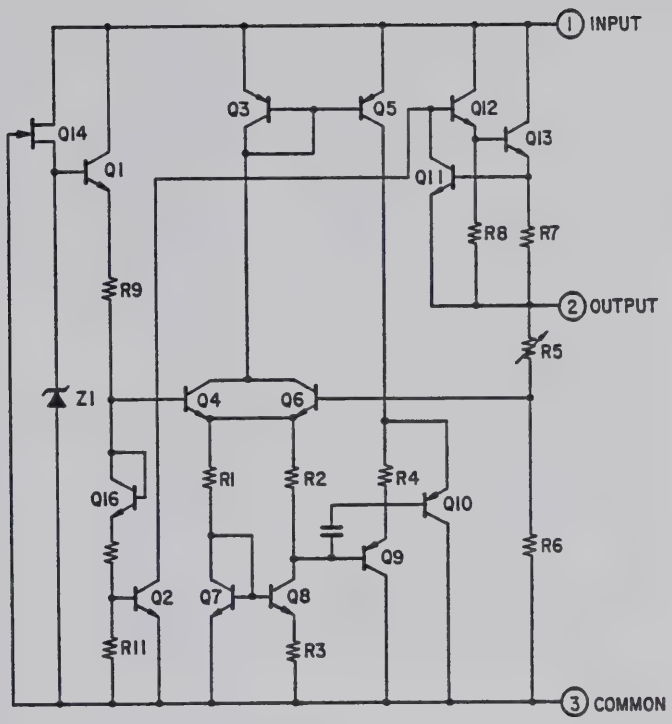




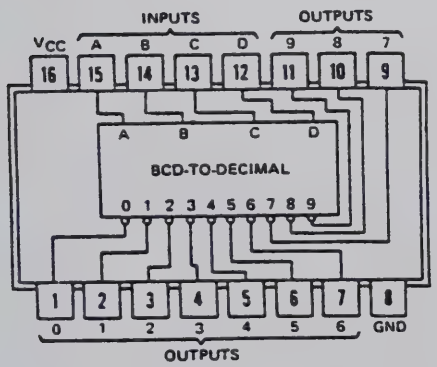



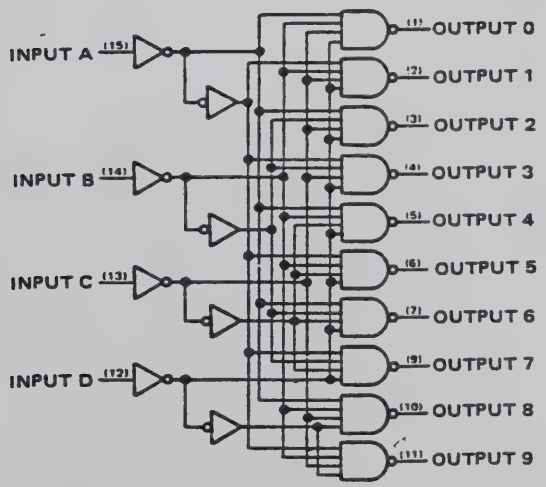
## IC305, 306 TA78L005AP


1. INPUT
2. OUTPUT
3. COMMON

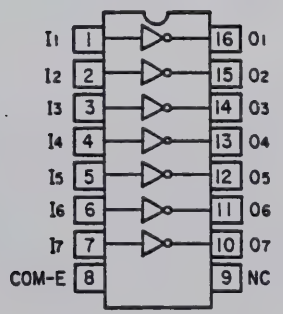


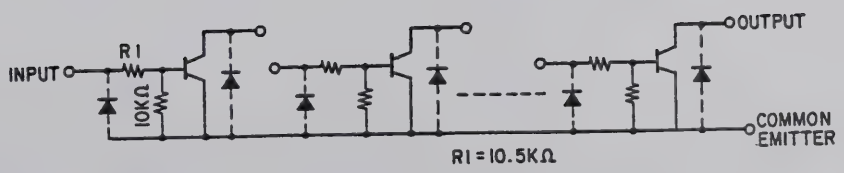

## IC501 SN74LS145 or HD74LS145



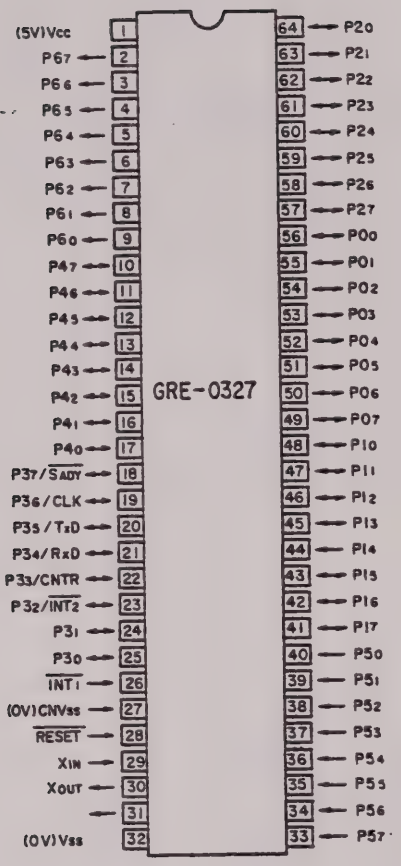



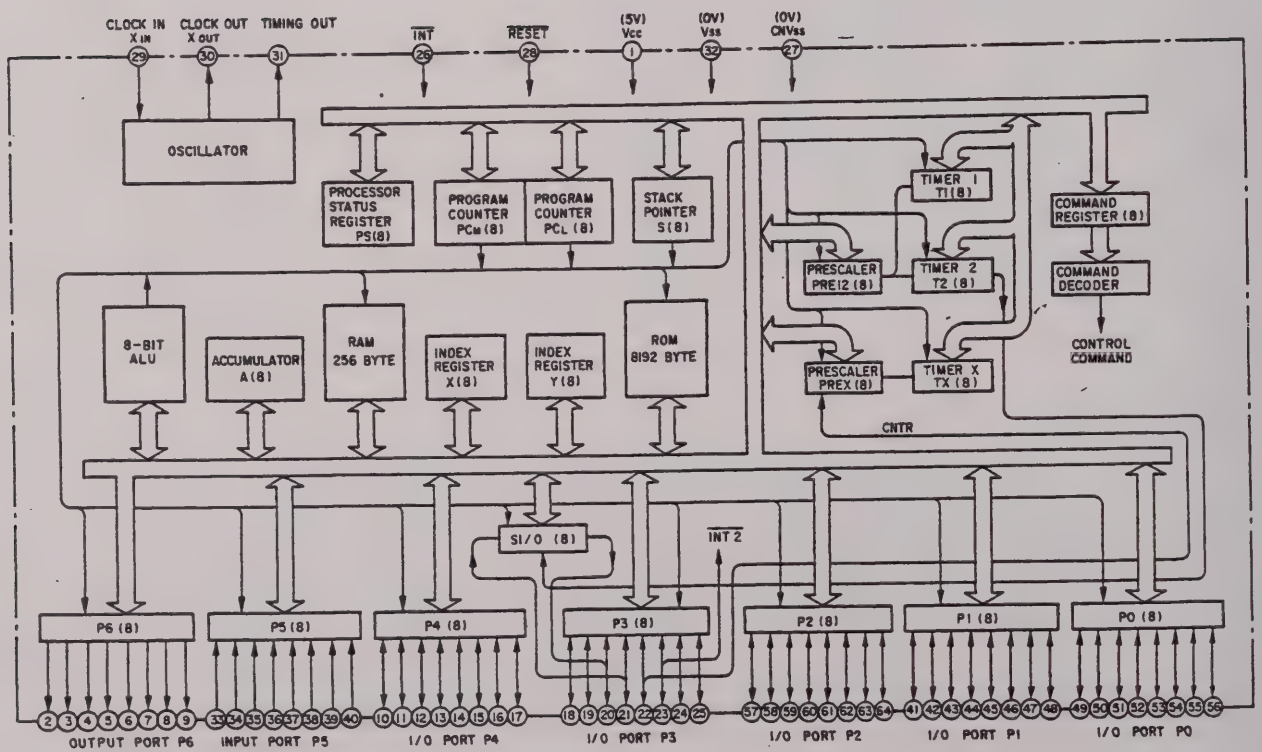

## IC502 TD62504P



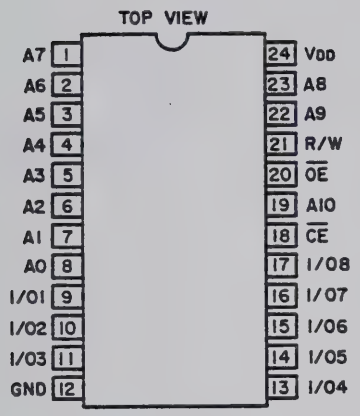



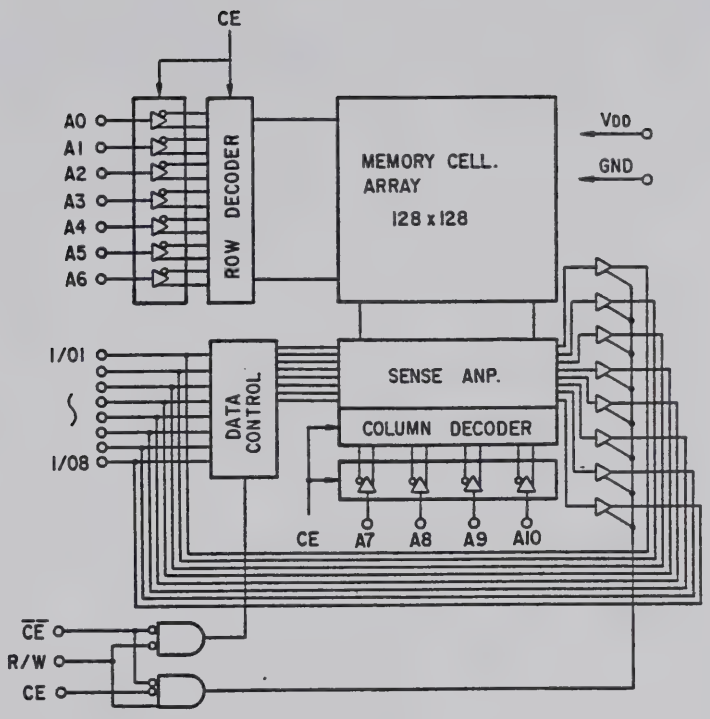
## IC503 GRE-0327



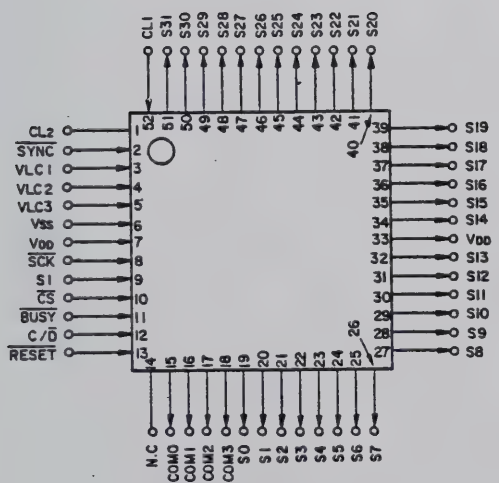



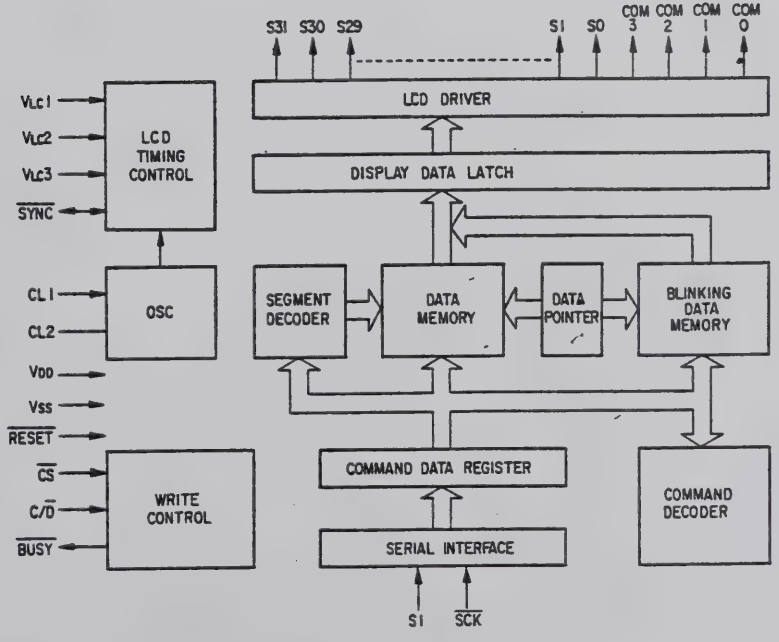
## IC504 TC5517CF-20 or μPD446G-45



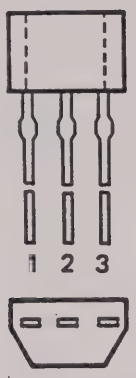

## IC701 μPD7225G



# TRANSISTOR LEAD IDENTIFICATION

(A) 2SC2458(Y,GR)
2SC2458L(GR)
2SC2668(Y)
2SA1048
2SC3327
RN2201

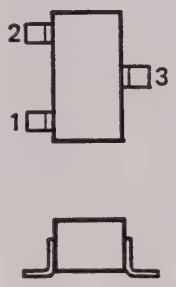



1. EMITTER
2. COLLECTOR
3. BASE

(B) 2SC3355

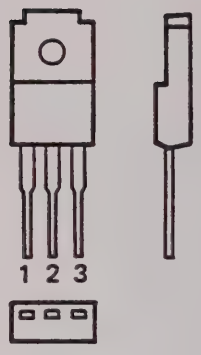

1. BASE
2. EMITTER
3. COLLECTOR

(C) 2SC3356



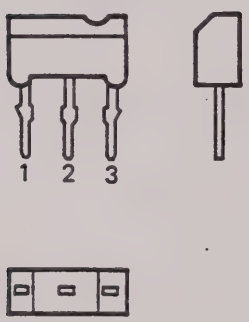

1. EMITTER
2. BASE
3. COLLECTOR

(D) 2SD1406



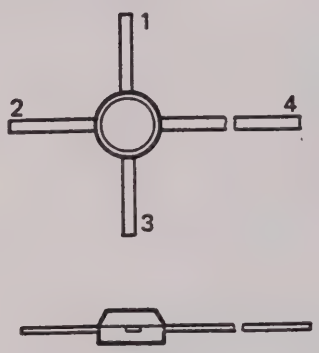

1. BASE
2. COLLECTOR
3. EMITTER

(E) 2SD1330



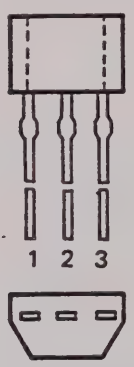

1. BASE
2. COLLECTOR
3. EMITTER

(F) 2SC3358



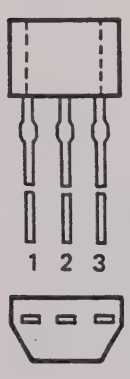

1. EMITTER
2. BASE
3. EMITTER
4. COLLECTOR

(G) 2SK184(GR)




1. DRAIN
2. GATE
3. SOURCE

(H) 2SK194A(GR)




1. DRAIN
2. SOURCE
3. GATE

(I) 2SC945(AQ)

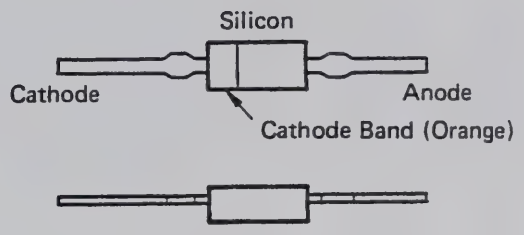

1. EMITTER
2. COLLECTOR
3. BASE

(J) RN2005

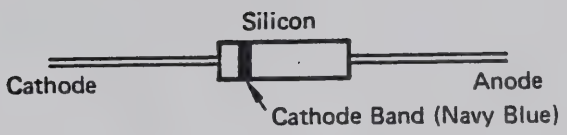

1. EMITTER
2. COLLECTOR
3. BASE

# DIODE IDENTIFICATION AND LEAD POLARITY

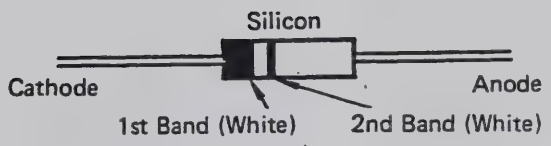
A) 1SS241



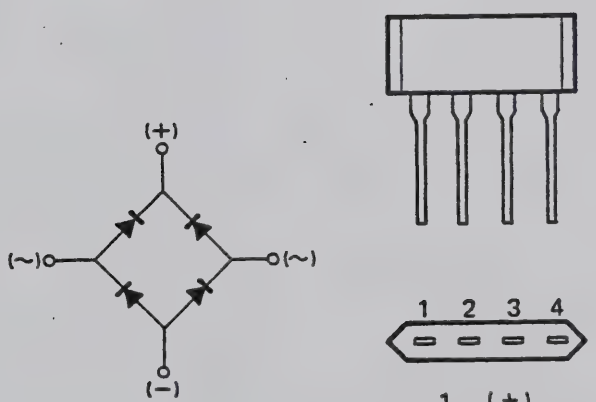

B) 1S2076A



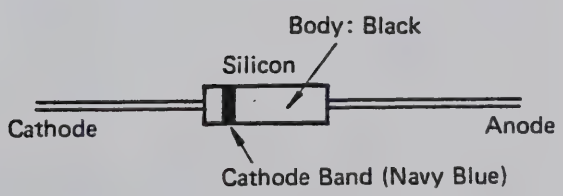

C) SR1K-2



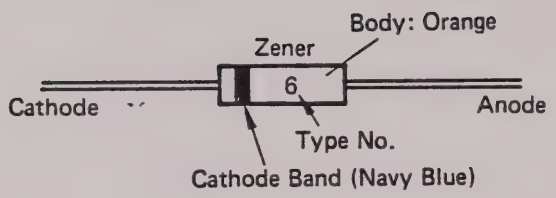

D) 1B4B41



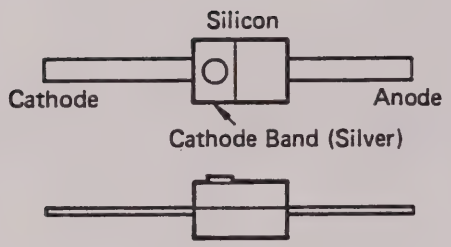

E) 1S1585



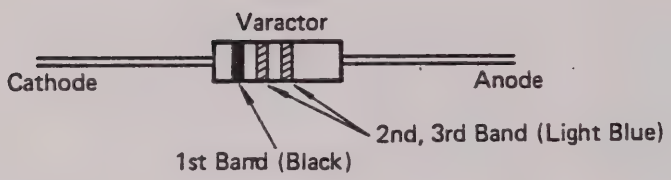
F) HZ6B2L, HZ9BLL
HZ11BLL



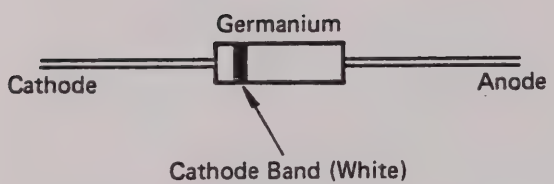

G) 1T25



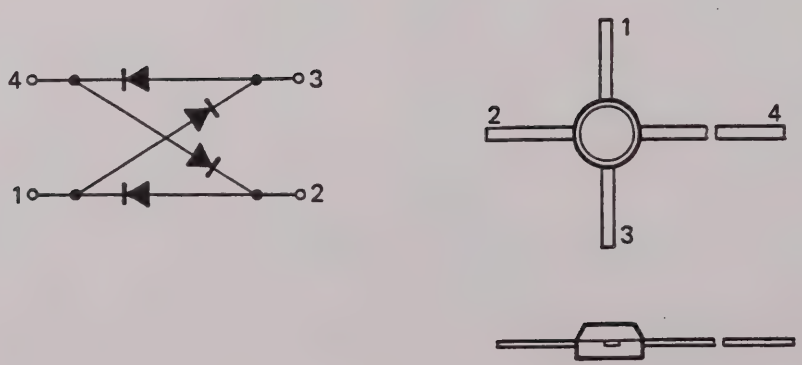

H) 1SV89



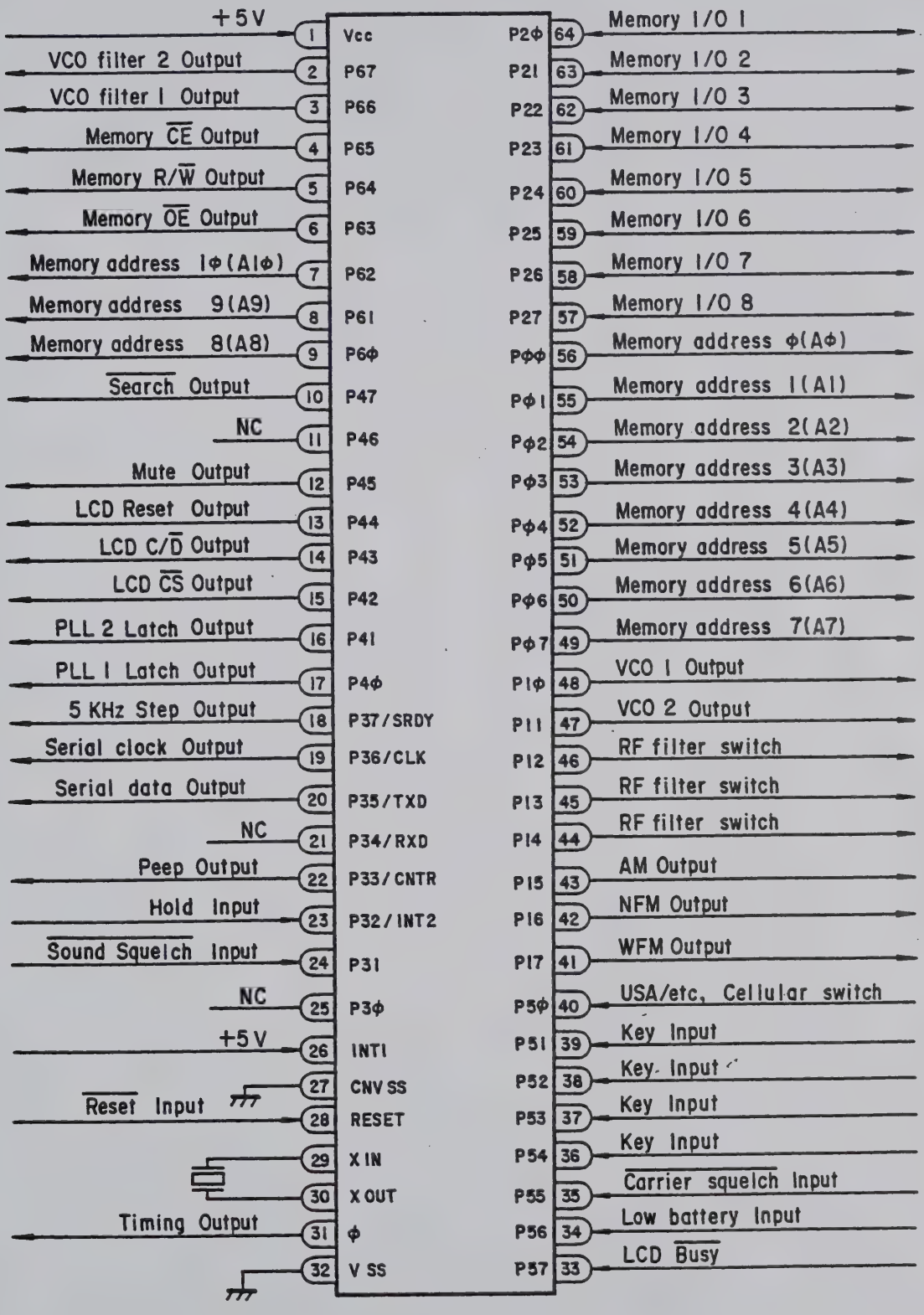

I) OA90-R




J) ND487CI-3R



# MICROPROCESSOR (IC-503) PIN ALLOCATION



# MICROPROCESSOR (IC-503) PORT FORMAT

| Pin No. | Symbol | Function | Pin No. | Symbol | Function |
|---|---|---|---|---|---|
| 1 | VCC | +5 V | 33 | P57 | LCD Busy |
| 2 | P67 | VCO filter 2 Output | 34 | P56 | Low battery Input |
| 3 | P66 | VCO filter 1 Output | 35 | P55 | Carrier Squelch Input |
| 4 | P67 | Memory CE Output | 36 | P54 | Key Input |
| 5 | P64 | Memory R/W Output | 37 | P53 | Key Input |
| 6 | P63 | Memory OE Output | 38 | P52 | Key Input |
| 7 | P62 | Memory address 10 (A10) | 39 | P51 | Key Input |
| 8 | P61 | Memory address 9 (A9) | 40 | P50 | USA/etc., Cellular Switch |
| 9 | P60 | Memory address 8 (A8) | 41 | P17 | WFM Output |
| 10 | P47 | Search Output | 42 | P16 | NFM Output |
| 11 | P46 | NC | 43 | P15 | AM Output |
| 12 | P45 | Mute Output | 44 | P14 | RF filter Switch |
| 13 | P44 | LCD Reset Output | 45 | P13 | RF filter Switch |
| 14 | P43 | LCD C/D Output | 46 | D12 | RF filter Switch |
| 15 | P42 | LCD CS Output | 47 | P11 | VCO 2 Output |
| 16 | P41 | PLL 2 Latch Output | 48 | P10 | VCO 1 Output |
| 17 | P40 | PLL 1 Latch Output | 49 | P07 | Memory address 7 (A7) |
| 18 | P37/SRDY | 5 kHz Step Output | 50 | P06 | Memory address 6 (A6) |
| 19 | P36/CLK | Serial Clock Output | 51 | P05 | Memory address 5 (A5) |
| 20 | P35/TxD | Serial Data Output | 52 | P04 | Memory address 4 (A4) |
| 21 | P34/RxD | NC | 53 | P03 | Memory address 3 (A3) |
| 22 | P33/CNTR | Peep Output | 54 | P02 | Memory address 2 (A2) |
| 23 | P32/INT2 | Hold Input | 55 | P01 | Memory address 1 (A1) |
| 24 | P31 | Sound Squelch Input | 56 | P00 | Memory address 0 (A0) |
| 25 | P30 | NC | 57 | P27 | Memory I/O 8 |
| 26 | INT1 | +5 V | 58 | P26 | Memory I/O 7 |
| 27 | $CNV_{SS}$ | GND | 59 | P25 | Memory I/O 6 |
| 28 | RESET | Reset Input | 60 | P24 | Memory I/O 5 |
| 29 | $X_{IN}$ | Clock Input | 61 | P23 | Memory I/O 4 |
| 30 | $X_{OUT}$ | Clock Output | 62 | P22 | Memory I/O 3 |
| 31 | $\phi$ | Timing Output | 63 | P21 | Memory I/O 2 |
| 32 | $V_{SS}$ | 0 V | 64 | P20 | Memory I/O 1 |

# MICROPROCESSOR (IC-503) FUNCTION TABLE

**(1) Outputs of VCO (P10, P11) and VCO filter (P66, P67)**

| Receiving Frequency (MHz) | VCO Output | VCO filter Output |
|---|---|---|
| 25.0000 to 220.4950 | VCO 1 (P10) "H" | VCO filter 1 (P66) "H" Level |
| 220.5000 to 520.0000 | VCO 2 (P11) "H" | |
| 760.0000 to 1052.4950 | VCO 1 (P10) "H" | VCO filter 2 (P67) "H" Level |
| 1052.5000 to 1300.0000 | VCO 2 (P11) "H" | |

**(2) Outputs of RF filter (P12, P13, P14)**

| Receiving Frequency (MHz) | P12 | P13 | P14 |
|---|---|---|---|
| 25.0000 to 39.9950 | H | L | L |
| 40.0000 to 67.9950 | L | H | L |
| 68.0000 to 107.9950 | H | H | L |
| 108.0000 to 173.9950 | L | L | H |
| 174.0000 to 279.9950 | H | L | H |
| 280.0000 to 520.0000 | L | H | H |
| 760.0000 to 1300.0000 | H | H | H |

**(3) Outputs of Search (P47) and 5 kHz Step (P37)**

| | | | $\overline{\text{Search}}$ Output (P47) | 5 kHz Step Output (P37) |
|---|---|---|---|---|
| MANUAL Operation | | | H | L |
| PROGRAM Operation | | | H | L |
| SCAN Operation | | | H | L |
| In SEARCH Operation | Receiving Frequency 25 to 520 MHz | at 5 kHz Step | L | H |
| | | at Other Step | L | L |
| | Receiving Frequency 760 to 1300 MHz | at 5 kHz Step | L | H |
| | | at Other Step | L | L |

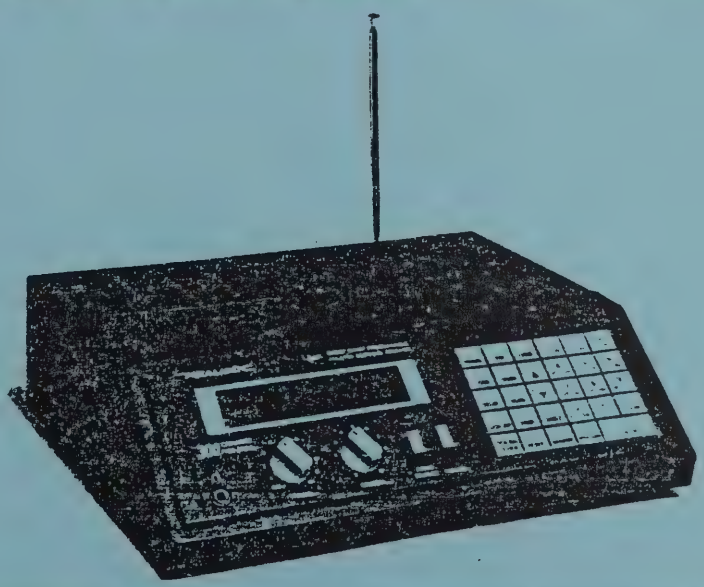
REALISTIC®

# Service Manual

20-119/9119

## PRO-2004
## PROGRAMMABLE SCANNER
## GENERAL COVERAGE
## AM/FM MONITOR RECEIVER

## Catalog Number: 20-119/9119



CUSTOM MANUFACTURED FOR RADIO SHACK, A DIVISION OF TANDY CORPORATION

# CONTENTS



**PRODUCT SAFETY NOTICE**

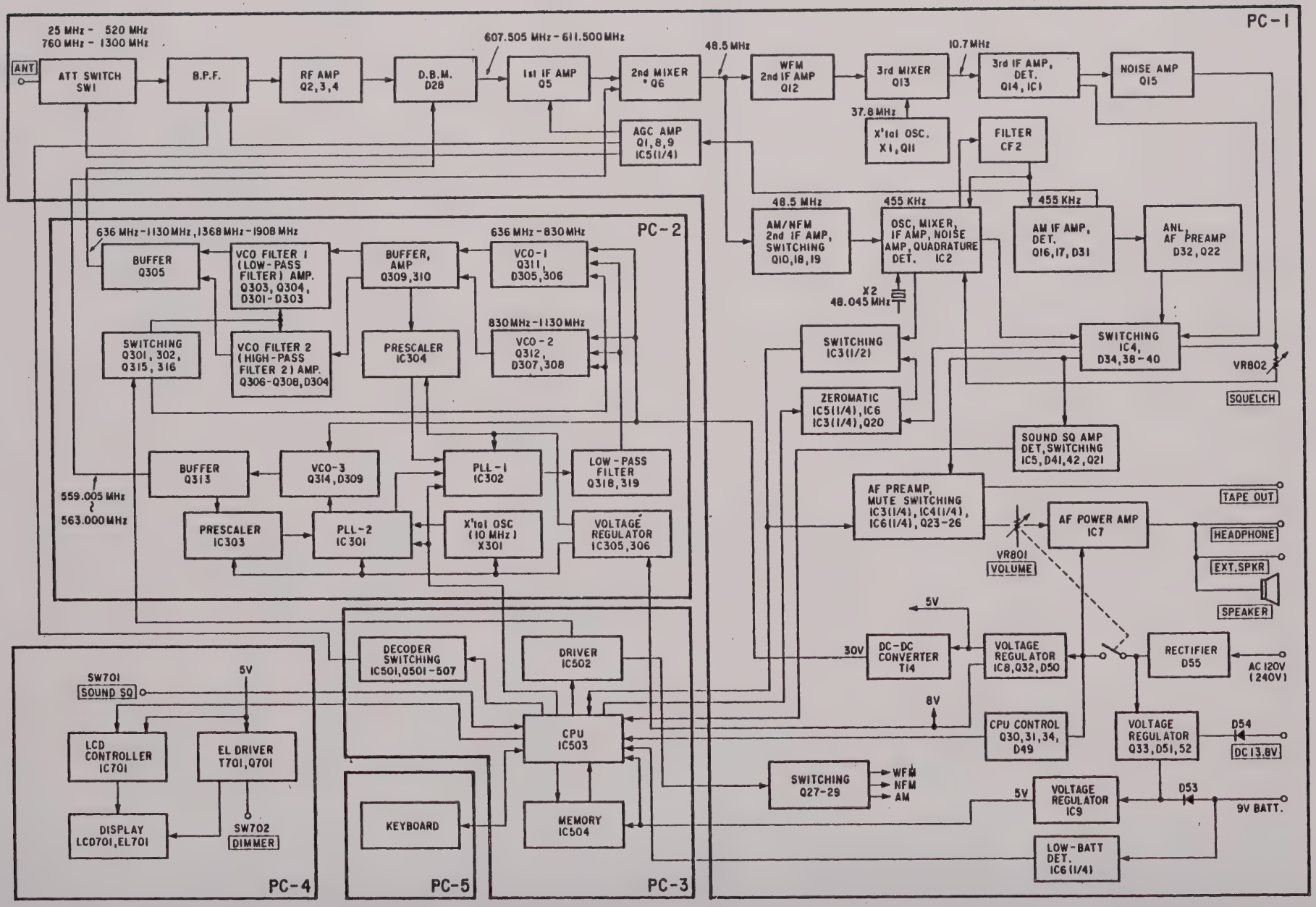
Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by a ⚠ in the schematic diagram and the parts list.
Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.

# SPECIFICATIONS

| DESCRIPTION | NOMINAL SPEC. | LIMIT SPEC. |
|---|---|---|
| Frequency Range | | 25 to 520 MHz<br>760 to 1300 MHz |
| Sensitivity | | |
| NFM: 20 dB S/N at 3 kHz DEV. 1 kHz | | |
| 25 to 520 MHz | 0.5 μV | 2.0 μV |
| 760 to 1100 MHz | 0.5 μV | 2.0 μV |
| 1100 to 1300 MHz | 3.0 μV | 10.0 μV |
| AM: 20 dB S/N at 60% MOD. 1 kHz | | |
| 25 to 520 MHz | 2.0 μV | 5.0 μV |
| 760 to 1100 MHz | 2.0 μV | 5.0 μV |
| 1100 to 1300 MHz | 3.0 μV | 10.0 μV |
| WFM: 30 dB S/N at 22.5 kHz DEV. 1 kHz | | |
| 25 to 520 MHz | 3.0 μV | 10.0 μV |
| 760 to 1100 MHz | 3.0 μV | 10.0 μV |
| 1100 to 1300 MHz | 10.0 μV | 20.0 μV |
| Selectivity | | |
| NFM/AM | | |
| −6 dB | ±9 kHz | ±12 kHz |
| −50 dB | ±15 kHz | ±18 kHz |
| WFM | | |
| −6 dB | ±150 kHz | ±200 kHz |
| −50 dB | ±300 kHz | ±400 kHz |
| Modulation Acceptance: EIA RS-204-A | ±8 kHz | ±5 kHz |
| Spurious Rejection at 328 MHz (NFM) | 40 dB | 35 dB |
| Image Ratio at 70 MHz (NFM) | 35 dB | 25 dB |
| 70 MHz + (2x610 MHz) = 1290 MHz | | |
| IF Rejection | | |
| 610 MHz at 70 MHz (NFM) | 60 dB | 40 dB |
| 608 MHz at 1000 MHz (NFM) | 60 dB | 40 dB |
| Signal to Noise Ratio | | |
| NFM/AM | 40 dB | 30 dB |
| 3 kHz DEV. at 1 kHz | | |
| 60% MOD. at 1 kHz | | |
| 100 μV INPUT | | |
| WFM | 45 dB | 35 dB |
| 22.5 kHz DEV. at 1 kHz | | |
| Squelch Sensitivity | | |
| NFM/AM | | |
| Threshold 25 to 520 MHz | 0.5 μV | 2.0 μV |
| 760 to 1100 MHz | 0.5 μV | 2.0 μV |
| 1100 to 1300 MHz | 3.0 μV | 10.0 μV |
| Tight (S + N/N) | 25 dB | 15 dB |
| WFM | | |
| Threshold 25 to 520 MHz | 3.0 μV | 10.0 μV |
| 760 to 1100 MHz | 3.0 μV | 10.0 μV |
| 1100 to 1300 MHz | 10.0 μV | 20.0 μV |
| Tight (S + N/N) | 40 dB | 30 dB |
| Scanning Rate | | |
| Fast | 16 channel/sec. | 14 to 18 channel/sec. |
| Slow | 8 channel/sec. | 7 to 9 channel/sec. |

| | | |
|---|---|---|
| **Search Rate** | | |
| **Fast** | 16 steps/sec. | 14 to 18 steps/sec. |
| **Slow** | 8 steps/sec. | 7 to 9 steps/sec. |
| **Residual Noise (Vol. Min.)** | 3 mV | 5 mV |
| **Priority Sampling** | 2 sec. | 1.5 to 2.5 sec. |
| **Scan Delay Time** | 2 sec. | 1.5 to 2.5 sec. |
| **Audio Output Power (T.H.D. 10%)** | 1.8 W | 1.3 W |
| **Tape Output** | | |
| **MOD. and DEV:** | | |
| **NFM 3 kHz DEV. at 1 kHz** | | |
| **AM 60% MOD. at 1 kHz** | 600 mV | 300 mV |
| **WFM 45 kHz DEV. at 1 kHz** | | |
| **LOAD: 10 k ohm** | | |
| **INPUT: 100 $\mu$V** | | |
| **LOW BATT Indicator** | 4.5 V | 4.5 ± 0.5 V |
| **Channels of Operation** | Any 300 channels in any band combination (30 channels x 10 banks), and 10 Monitor channels. | |
| **Channel, Frequency and Mode Display** | Liquid crystal display | |
| **Receiving System** | Direct Key Entry Digital Controlled Synthesizer, Superheterodyne. | |
| **Power Source** | AC 120 V, 60 Hz, 20 W max.<br>DC 13.8 V, 12 W max. | |
| **Speaker** | Built-in 3" (77 mm) 8 ohm Dynamic Speaker | |
| **Dimensions** | Approx. 2-7/8" (75 mm) x 10-1/4" (275 mm) x 9" (230 mm) HWD | |
| **Weight** | 7.0 lbs (3.2 kg.) | |

**NOTE:** *Nominal Specs represent the design specs: all units should be able to approximate these – some will exceed and some may drop slightly below these specs. Limit Specs represent the absolute worst condition that still might be considered acceptable; in no case should a unit perform to less than within any Limit Spec.*




BLOCK DIAGRAM

# PRINCIPLES OF OPERATION

The PRO-2004 is a Phase Locked Loop (PLL) synthesized VHF/UHF, AM/FM Receiver controlled by a Central Processing Unit (CPU) via the keyboard.

Receiving mode and search step are initially set to correspond with the frequencies entered. When a frequency within FM broadcast band is keyed in, receiving mode is set to Wideband FM (WFM). When a frequency in Action radio band, Police, Fire, Ambulance, Ham radio etc. is keyed in, the mode is set to Narrowband FM (NFM), and when a frequency in Aircraft and CB band is keyed in, it sets to AM mode. Also the mode and step can be changed by [MODE], [STEP] Keys.

The CPU (IC-503) controls receiving frequency range, frequency determination, scanning speed, delay time, etc. The CPU is able to do only the assigned functions, and no modification of the CPU is feasible.

The following paragraphs explain the operation of the circuit in terms of the functional blocks:

RF input circuit comprises 10 dB attenuator and Bandpass filter. A signal generated by VCO-1 or VCO-2 is applied to Double balanced mixer (D.B.M.) via Low-pass or High-pass filter and mixed with the RF signal. The D.B.M. is employed to facilitates 25 MHz to 1300 MHz mixing.

The 1st IF (Q5) is 607.505 MHz to 611.500 MHz, and the signal is mixed with VCO-3 frequency at the 2nd mixer (Q6) to produce 48.5 MHz signal, which is applied to WFM IF (Q12) or AM/NFM IF (Q10, Q18, Q19). Corresponding with input from the keyboard, CPU determines which of VCO-1 or VCO-2, WFM IF, AM/NFM, AM IF, Data of PLL circuit to be functioned, and outputs the necessary data.

A signal entered to AM/NFM IF is mixed with X'tal oscillation frequency 48.045 MHz at the 3rd mixer (IC-2) and converted to 455 kHz signal. A signal entered to WFM IF is mixed with X'tal oscillation frequency 37.8 MHz at the 3rd mixer (Q13) and converted to 10.7 MHz signal. The signals are further amplified and detected to AF signal.

AF signals of WFM, AM, NFM are CPU controlled and applied to AF Power Amplifier (IC-7) via switching circuit. Squelch signal is comprised of noise product from WFM/NFM detector output, and amplified by IC-2 to switching signal, which controls AF mute and CPU.

Any unstable supply voltage to the CPU can produce CPU malfunctions, such as wrong data processing, wrong data transfer, etc. To overcome this C512 and R501 "initialize" the CPU. Initialization is done when RESTART switch is pushed. Figure A shows initializing waveform.

CX501 (7.37 MHz) is a clock which is used for CPU control. Figure B shows 1/4 divided waveform at Pin 31 of IC-503.

CPU output data display frequency, function, etc. on LCD. LCD is back lighted with Electro Luminescence, which works from 70 V rms, 300 Hz A.C.

Power supply comprises D.C 30 V, 8 V and two 5 V lines.

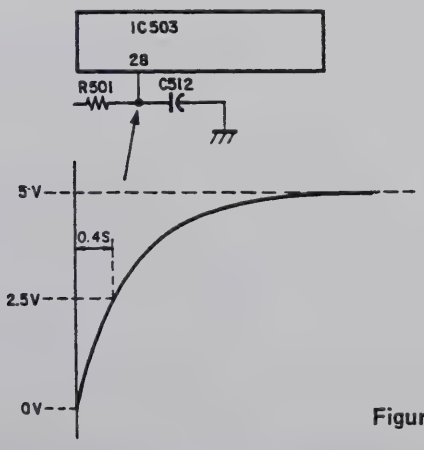



Figure A

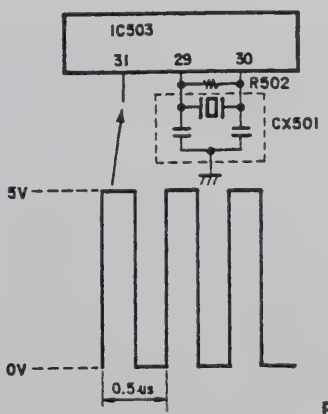
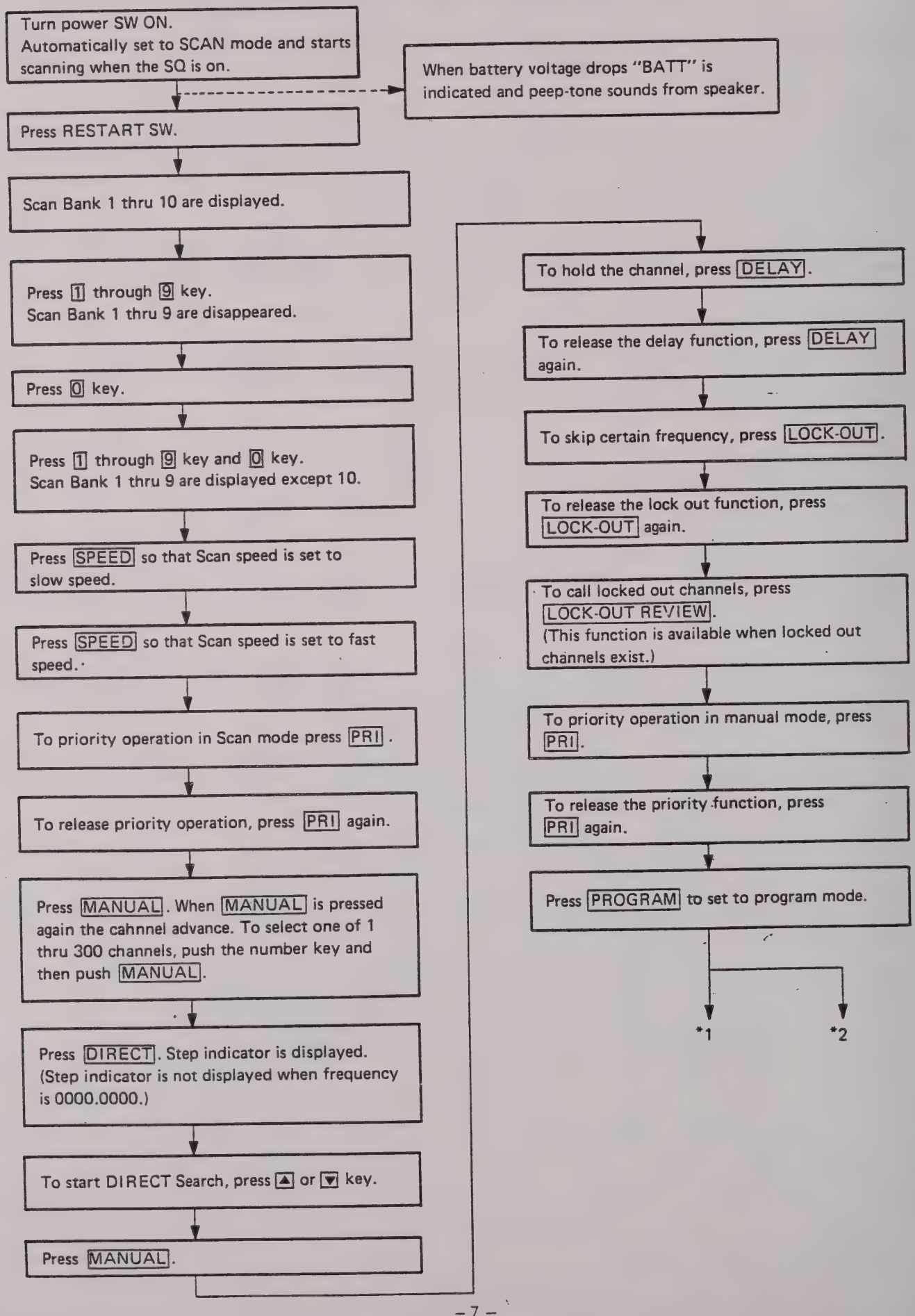



Figure B

# GENERAL OPERATION OUTLINE



*1

Key in the desired frequency in each channel as follows:

Key in the desired frequency with numeral keys.

Press [ENTER] to memorize the frequency.
If wrong frequency (out of the band) is entered, "ERROR" is displayed.
Press [CLEAR] and then enter the correct frequency.

Press [PROGRAM].
Advance to next channel.
Key in the frequency and press [ENTER], repeat it to memorize frequencies one by one.

Press [PRI] so that priority channel is appeared.

To revert to the previous channel, press [PRI] again.

Press numeral keys (1 thru 300) and then press [PRI].
Priority channel is set to entered new channel.

To call monitor channels, press [MONITOR].

Press [MONITOR] so that next monitor channel is appeared.

To call the monitor channels directly, press numeral keys.

To revert to the previous channel, press [PROGRAM].

*2

Key in search frequency as follows.

Press [LIMIT] (or numeral key and [LIMIT]) and key in lower frequency with numeral keys.

Press [ENTER].

Press [LIMIT] and key in upper frequency.

Press [ENTER].

To change mode, press [MODE].
The mode changes in the order of AM – NFM – WFM.

To change step, press [STEP].
The step changes 5 kHz – 12.5 kHz – 50 kHz.

To return to the initial setting of mode and step, press [RESET].

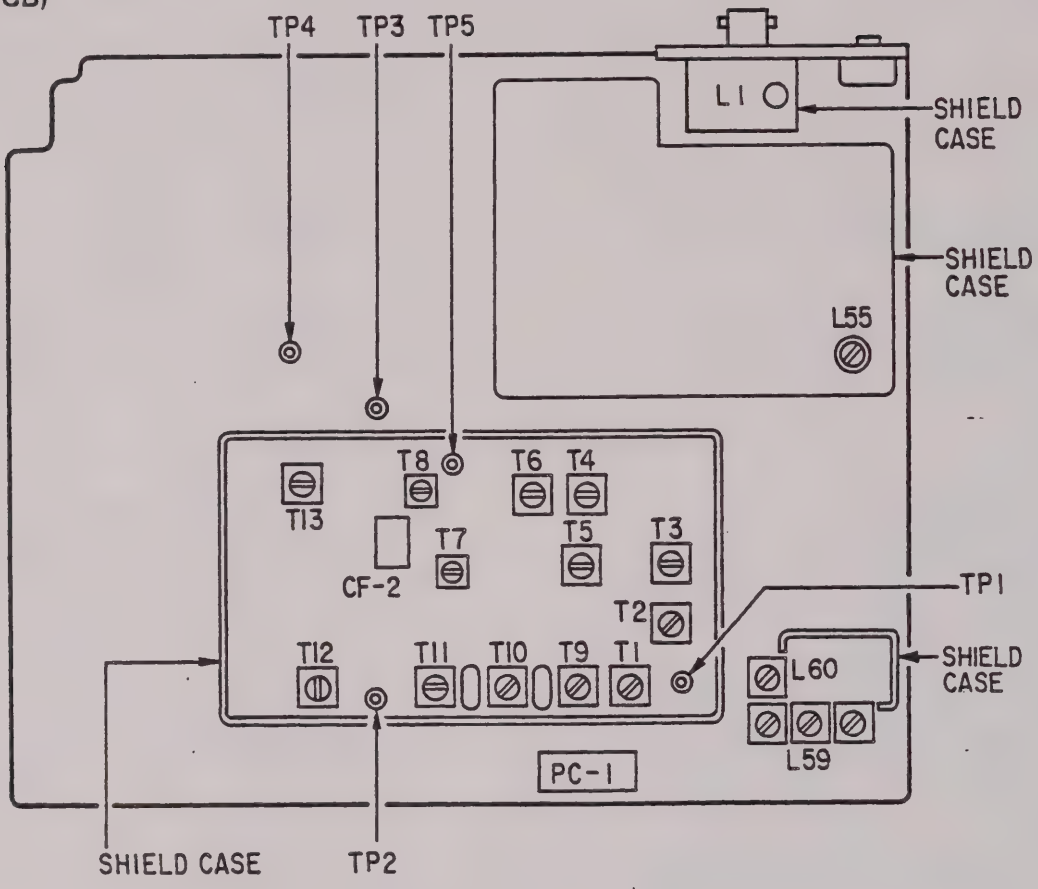
Press [▲] to search from lower frequency. Press [▼] to search from upper frequency.
(squelch must be on)

Press [MONITOR] to store the desired frequency (10 monitor channels) in the search mode.

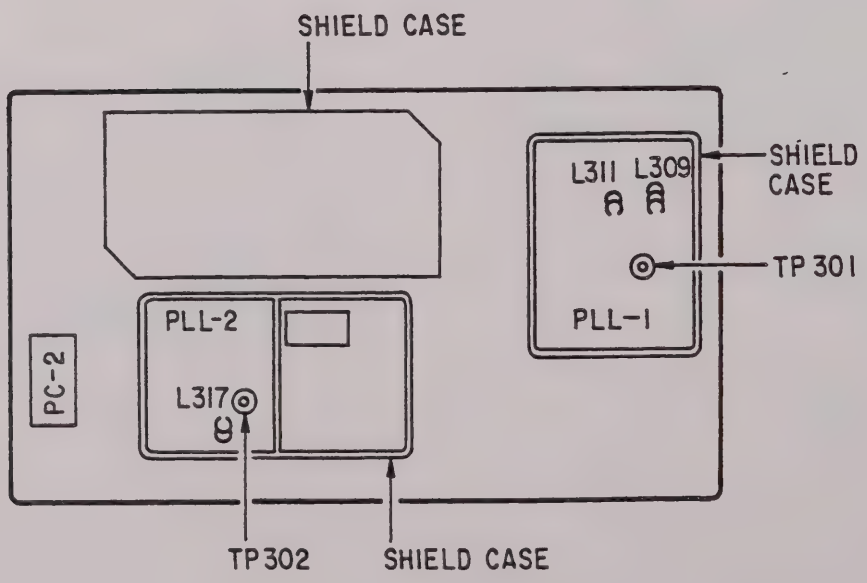
Press [ENTER] to store the desired frequency in the indicated channel.
Search operation starts.

## ALIGNMENT AND TEST POINTS

(LINEAR PCB)




(PLL PCB)



# ALIGNMENT PREPARATION

**Test equipment required**

1. Oscilloscope
2. AC SSVM
3. DC SSVM
4. 8-ohm dummy load
5. AM. FM. Signal Generator (25 to 1300 MHz)
6. Distortion Meter

**NOTE 1:** *Use non-metallic tuning tools.*
*The test equipment and Receiver should be warmed up at least 30 minutes before proceeding with alignment.*
*Input signal from the Generator should be kept as low as possible and still obtain usable output.*

# ALIGNMENT PROCEDURES

| Step | Control Setting Channel Programming | Test Instrument Connection | Adjust | Remarks |
|---|---|---|---|---|
| 1 | OFF/VOLUME control: ON<br>SQUELCH control: Fully counterclockwise (CCW)<br>Channel Programming: CH1 (220.495 MHz) CH2 (520 MHz) | Connect DC SSVM to TP301 (Figure 1) | L309<br>L311 | **Alignment of VCO (PLL-1)**<br>1) Select Channel 1 (220.495 MHz) and adjust L309 for 20V on the DC SSVM. See Table 1.<br>2) Select Channel 2 (520 MHz) and adjust L311 for 20V on the DC SSVM. See Table 1. |
| 2 | OFF/VOLUME control: ON<br>SQUELCH control: Fully CCW<br>Channel Programming: CH3 (804.5 MHz) | Connect DC SSVM to TP302 (Figure 2) | L317 | **Alignment of VCO (PLL-2)**<br>Adjust L317 for 3V on the DC SSVM. See Table 1. |

**Figure 1**

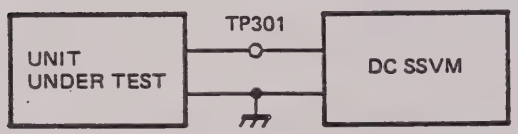



**Figure 2**

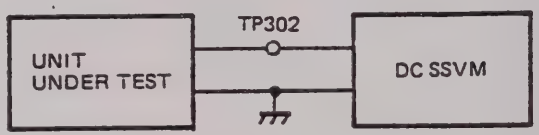
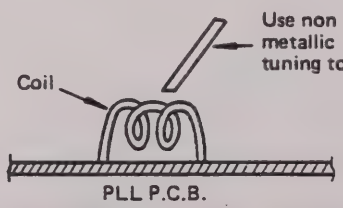
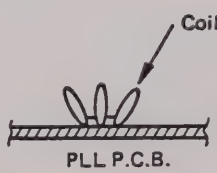
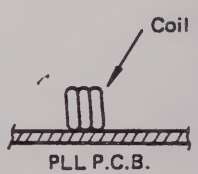
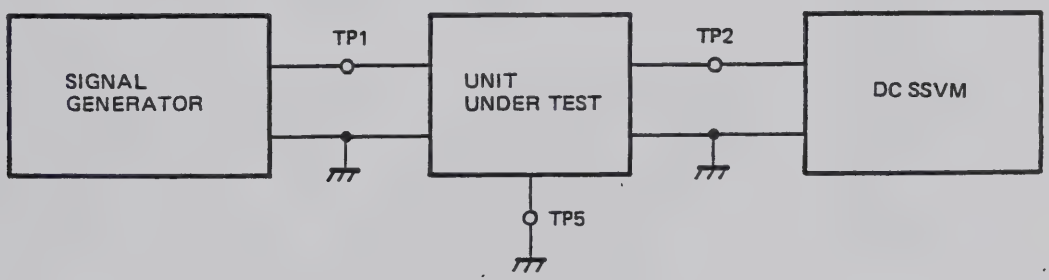



**Table 1**

| Coil L309, L311, L317 | Coil alignment (open) | Coil alignment (close) |
|---|---|---|
| **Figure 3**<br>  <br> | **Figure 4**<br>  <br> | **Figure 5**<br>  <br> |
| NOTE 1: Perform coils interval alignment delicately because it affects frequency much.<br>NOTE 2: Fix the coils with glue after alignment and then repeat the ALIGNMENT PROCEDURES Step 1, Step 2 after checking the fixation and temperature is normal. | * Open the coil as shown above by using non metallic tuning tool when a measuring voltage at TP301 or TP302 is higher than the setting voltage. | * Close the coil as shown above by using non metallic tuning tool when a measuring voltage at TP301 or TP302 is lower than the setting voltage. |

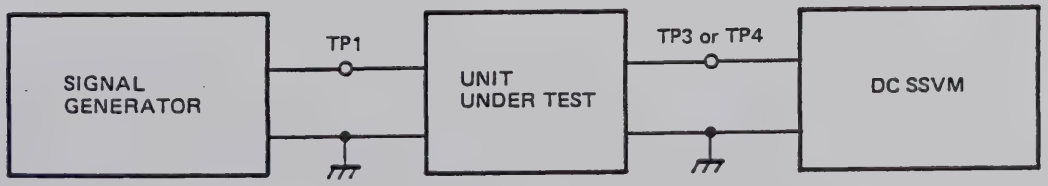
| Step | Control Setting<br>Channel Programming | Test Instrument<br>Connection | Adjust | Remarks |
|---|---|---|---|---|
| 3 | OFF/VOLUME control:<br>ON<br>SQUELCH control:<br>Fully counterclockwise<br>Channel Programming:<br>CH4 (250 MHz -NFM) | Connect Signal Generator to TP1, DC SSVM to TP2 and TP5 to ground.<br>(Figure 6) | T1<br>T9<br>T10<br>T11<br>T12 | Alignment of NFM/AM 2nd IF<br>1) Set the Signal Generator frequency to 48.5 MHz, 0.3 V output (NO MOD).<br>2) Adjust T1, T9, T10, T11 to maximum voltage at TP2.<br>3) Adjust T12 to minimum voltage at TP2, approx. 0.2V on the DC SSVM.<br>NOTE: Perform these adjustment by using the DC SSVM which is able to measure to three decimal places because of the output voltage of TP2 is low. |

**Figure 6**



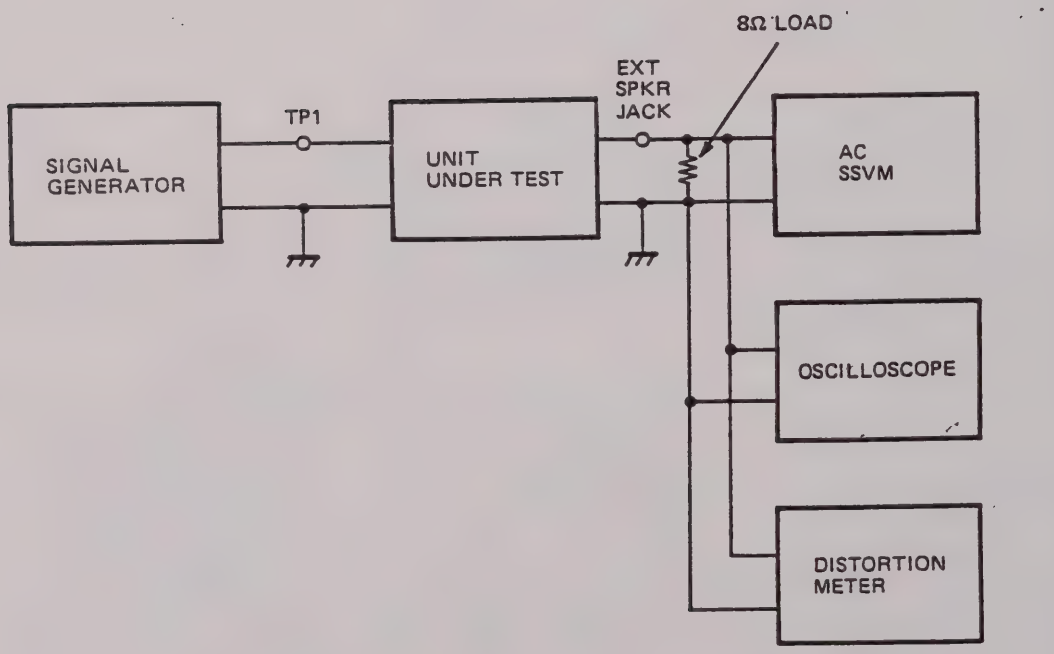

| Step | Control Setting<br>Channel Programming | Test Instrument<br>Connection | Adjust | Remarks |
|---|---|---|---|---|
| 4 | OFF/VOLUME control:<br>ON<br>SQUELCH control:<br>Fully CCW<br>Channel Programming:<br>CH4 (250 MHz - NFM) | Connect Signal Generator to TP1 and DC SSVM to TP4.<br>(Figure 7) | T13 | Alignment of 455 kHz NFM Discriminator coil<br>Set the Signal Generator frequency to 48.5 MHz, 100 $\mu$V output (NO MOD) and adjust T13 for 3.8V (±0.1) on the DC SSVM. |
| 5 | OFF/VOLUME control:<br>ON<br>SQUELCH control:<br>Fully CCW<br>Channel Programming:<br>CH5 (98 MHz - WFM) | Connect Signal Generator to TP1 and DC SSVM to TP3.<br>(Figure 7) | T6 | Alignment of 10.7 MHz WFM Discriminator coil<br>Set the Signal Generator frequency to 48.5 MHz, 100 $\mu$V output (NO MOD) and adjust T6 for 3.8V (±0.1) on the DC SSVM. |

**Figure 7**



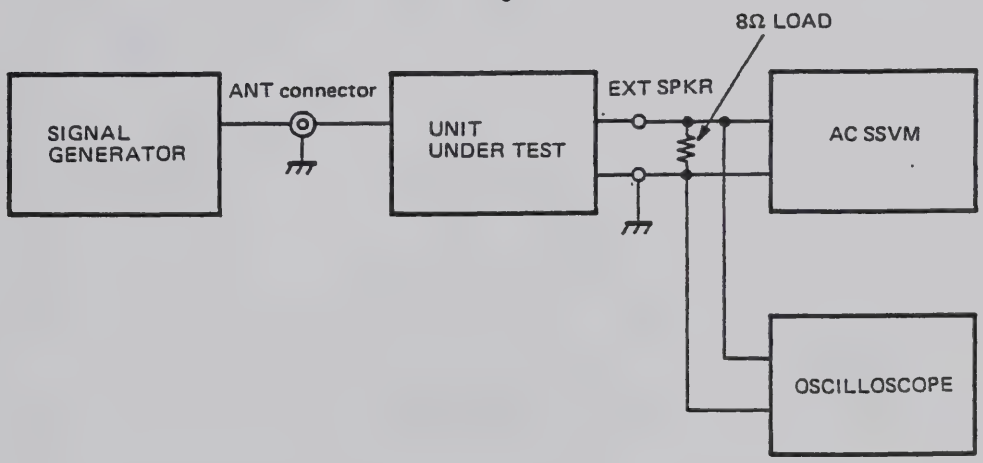
| Step | Control Setting<br>Chanel Programming | Test Instrument<br>Connection | Adjust | Remarks |
|---|---|---|---|---|
| 6 | OFF/VOLUME control:<br>ON<br>SQUELCH control:<br>Fully CCW<br>Channel Programming:<br>CH6 (120 MHz - AM) | Connect Signal Generator to TP1 and Oscilloscope, AC SSVM, Distortion Meter, 8Ω Load to EXT SPKR JACK.<br>(Figure 8) | T7 | Alignment of 455 kHz IF coil<br>1) Set the Signal Generator frequency to 48.5 MHz, AM: 60% MOD. at 1 kHz and 100 μV output<br>2) Adjust T7 to maximum sensitivity. |
| 7 | Same as step 6 | Same as step 6 | T8 | Alignment of 455 kHz AM DET. coil<br>1) Set the Signal Generator frequency to 48.5 MHz, AM: 60% MOD. at 1 kHz and 100 μV output.<br>2) Adjust T8 to minimum T.H.D. point. |

**Figure 8**



| Step | Control Setting<br>Channel Programming | Test Instrument<br>Connection | Adjust | Remarks |
|---|---|---|---|---|
| 8 | OFF/VOLUME control:<br>ON<br>SQUELCH control:<br>Fully CCW<br>Channel Programming:<br>CH5 (98 MHz - WFM) | Connect Signal Generator to ANT, connector and Oscilloscope, AC SSVM, 8Ω LOAD to EXT SPKR JACK.<br>(Figure 9) | T2<br>T3<br>T4<br>T5 | Alignment of 48.5 MHz and 10.7 MHz WFM IF coils<br>1) Set the Signal Generator frequency to 98 MHz<br>FM: 22.5 kHz DEV. at 1 kHz MOD, output approx. 2 μV.<br>2) Adjust T2, T3 to maximum sensitivity.<br>NOTE: Alignment of T4, T5 are not necessary.<br>When those core are turned, adjust cores so that those tops of cores become as high as those coil case. |

**Figure 9**

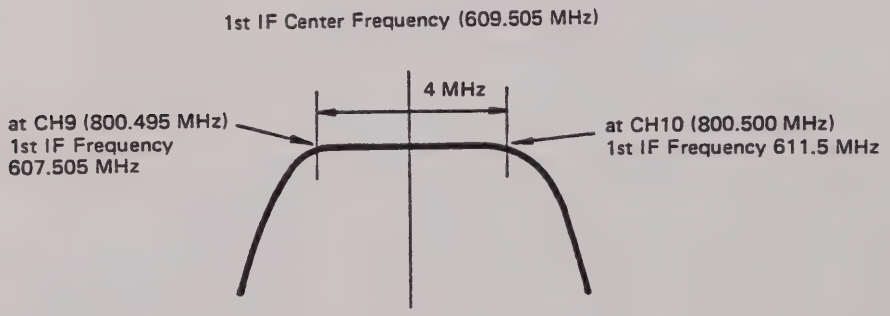



| Step | Control Setting<br>Channel Programming | Test Instrument<br>Connection | Adjust | Remarks |
|---|---|---|---|---|
| 9 | OFF/VOLUME control:<br>ON<br>SQUELCH control:<br>Fully CCW<br>Channel Programming:<br>CH7 (300.495 MHz – NFM) | Same as step 8 | L1<br>L55 | Alignment of IF TRAP coils<br>1) Set the Signal Generator frequency to 609.505 MHz<br>FM: 3 kHz DEV. 1 kHz MOD.<br>Output, approx. 3 mV<br>2) Adjust L1 and L55 to minimum sensitivity. |
| 10 | OFF/VOLUME control:<br>ON<br>SQUELCH control:<br>Fully CCW<br>Channel Programming:<br>CH8 (240.495 MHz – NFM) | Same as step 8 | L60 | Alignment of 512 MHz TRAP coil<br>1) Set the Signal Generator frequency to 337.495 MHz<br>FM: 3 kHz DEV. 1 kHz MOD,<br>Output, approx. 3 mV<br>2) Adjust L60 to minimum sensitivity. |

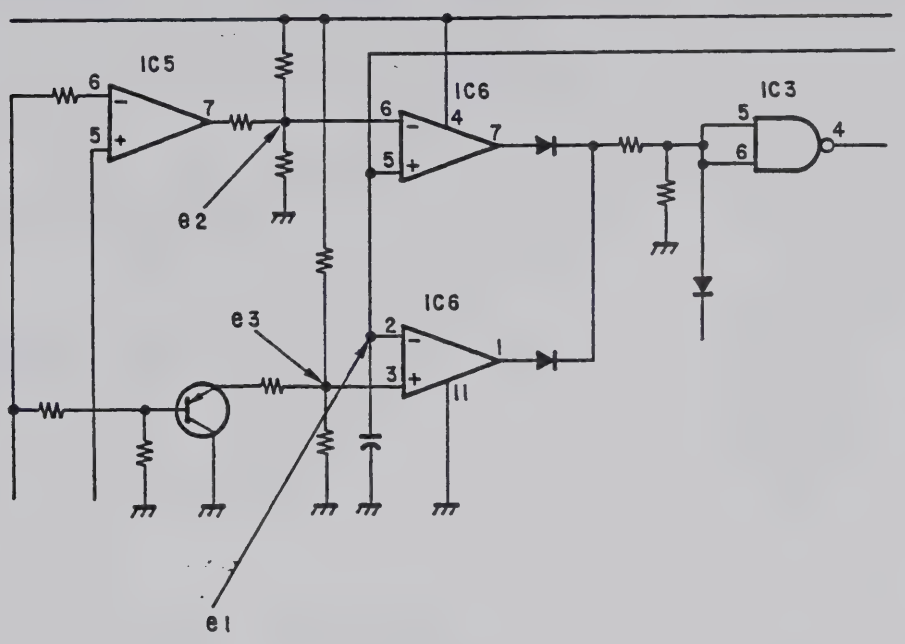
NOTE: Alignment of L59 (GR-H763, B.P.F. coil)
Do not adjust this coil because of L59 is already adjusted at Factory.
When turn the coil core, perform the alignment as below (step 11).
B.P.F. characteristic is Figure 10.

| Step | Control Setting<br>Channel Programming | Test Instrument<br>Connection | Adjust | Remarks |
|---|---|---|---|---|
| 11 | OFF/VOLUME control:<br>ON<br>SQUELCH control:<br>Fully CCW<br>Channel Programming:<br>CH9 (800.495 MHz)<br>CH10 (800.500 MHz) | Same as step 8<br>(Figure 9) | L59 | Alignment 1st IF (611.5 to 607.505 MHz) B.P.F. coil<br>1) Select channel 7 (800.495 MHz) and set the Signal Generator frequency to 800.495 MHz,<br>FM: 3 kHz DEV. at 1 kHz and 1 $\mu$V output.<br>2) Adjust L59 to maximum sensitivity.<br>3) Select channel 8 (800.500 MHz) and set the Signal Generator frequency to 800.500 MHz,<br>FM: 3 kHz DEV. at 1 kHz and 1 $\mu$V output.<br>4) Adjust L59 to maximum sensitivity.<br>NOTE: Align the balance of CH9, CH10 sensitivity to become same. |

**Figure 10**



# ZEROMATIC FUNCTION TEST PROCEDURE




Discriminator Curve

(NFM) (WFM)

(Zeromatic functions when OUTPUT is in "H" level.)

| | 0 < e1 < e3 | e3 < e1 < e2 | e2 < e1 < VCC |
|---|---|---|---|
| OUTPUT (IC3 Pin No. 4) | L | H | L |

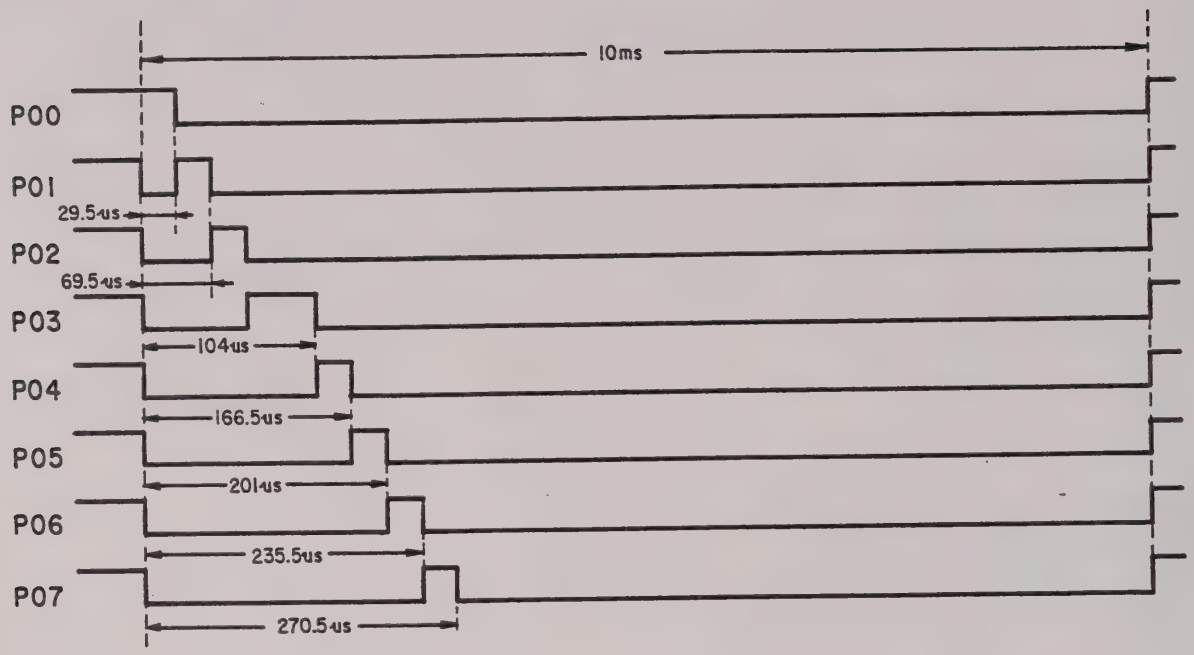
(NFM MOD.)

To adjust e1 voltage, receive signal in Manual mode, and set T13 to obtain 3.8 V (±0.1 V) at TP4. It is convenient to use the National Weather Service signal for the adjustment.

(WFM MOD.)

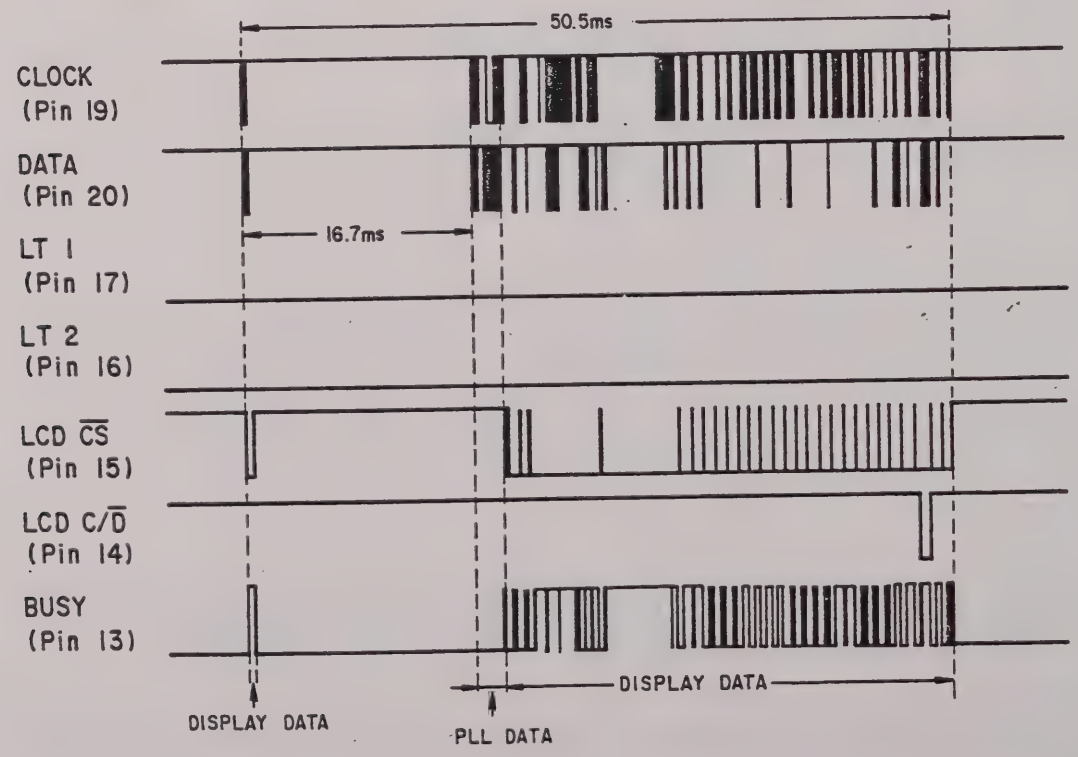
To adjust e1 voltage, receive signal in Manual mode and set T6 to obtain 3.8 V (±0.1 V) at TP3. It is convenient to use the FM. TV. sound signal for the adjustment.

## KEYS ACCESS PULSE OUTPUT (IC-503)

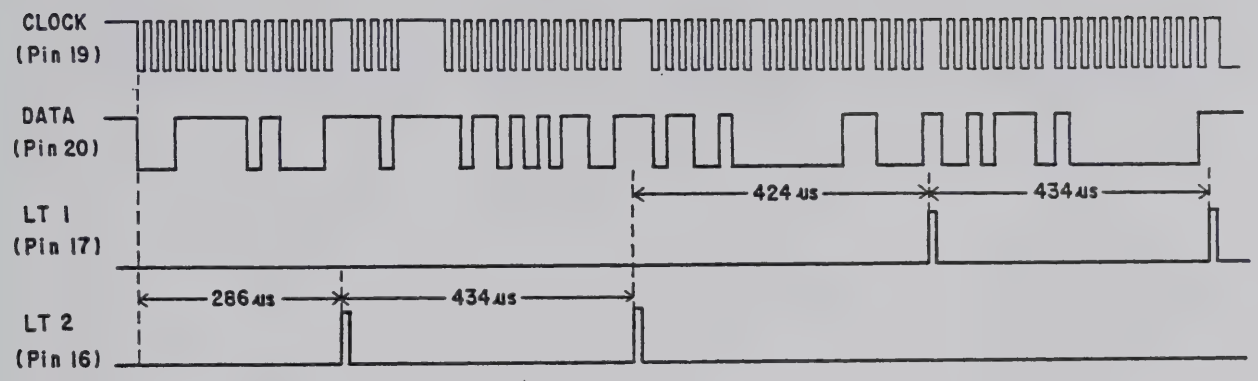



**NOTE:** Use a signal at P01 of IC-503 as trigger, and then observe the keys access pulse when PROGRAM key is pressed.

## DATA WAVEFORM (IC-503)

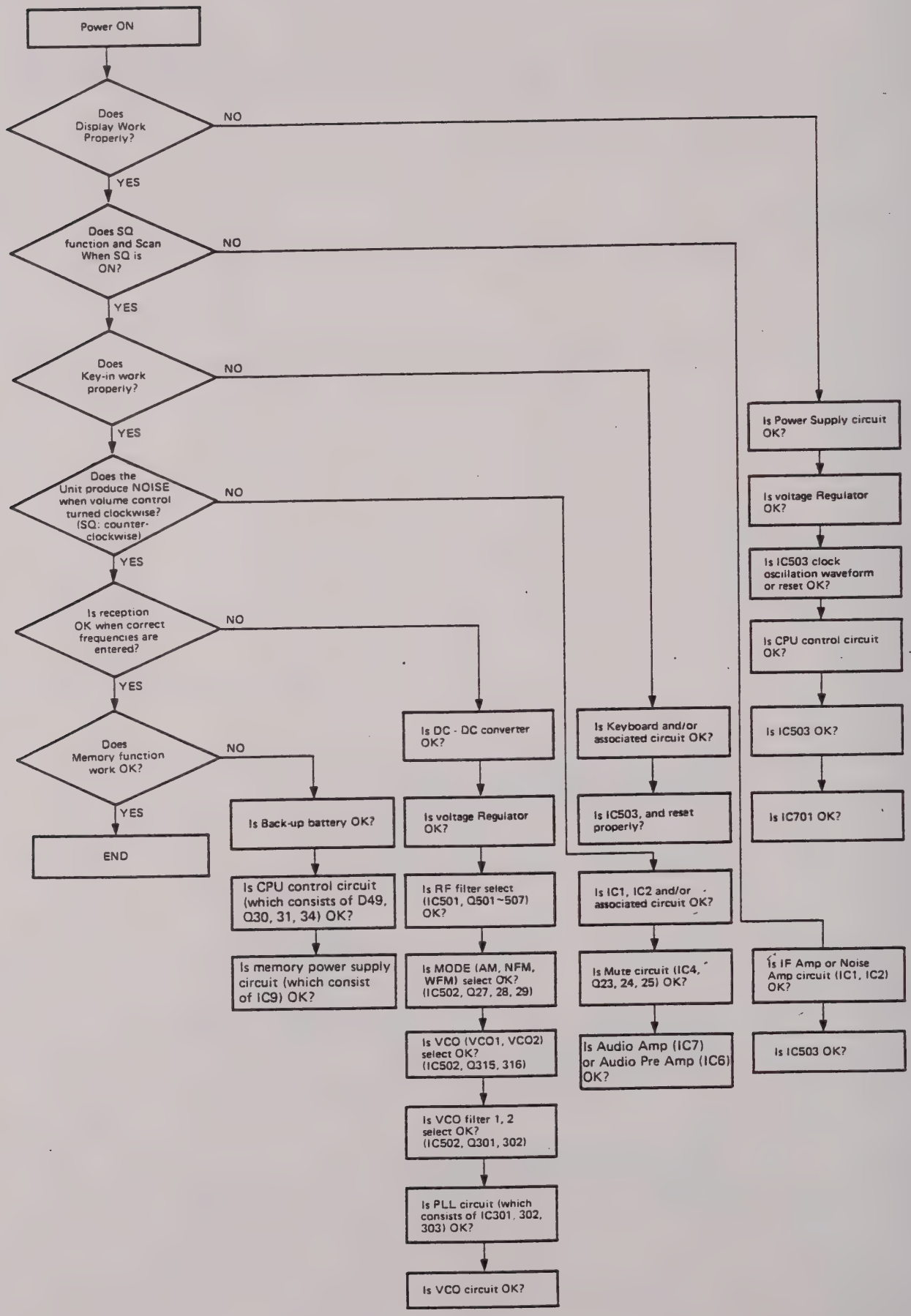


# PLL DATA WAVEFORM

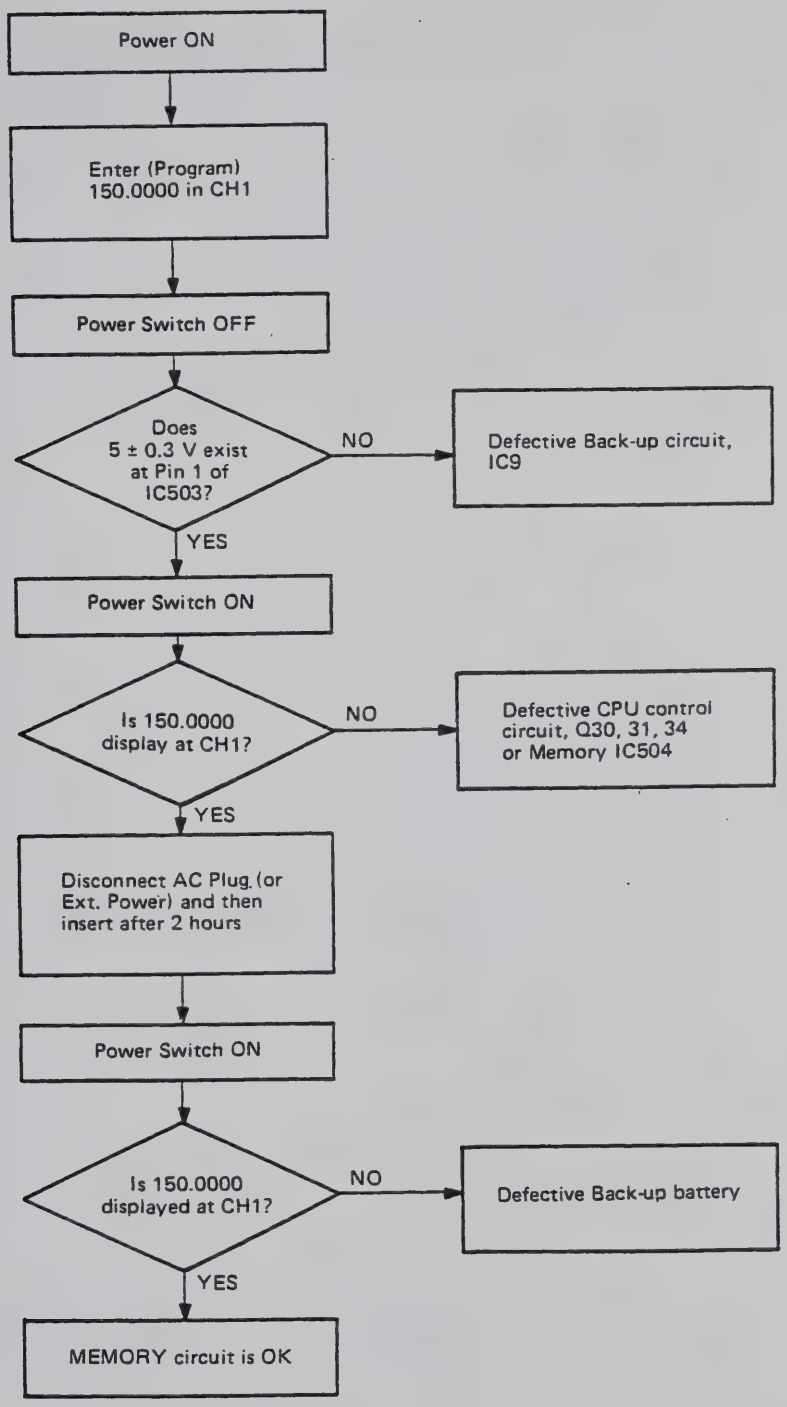



**NOTE:** Data in Program mode when 150.000 MHz entered.

# RECEPTION CHECK



# MEMORY CHECK



# TROUBLESHOOTING

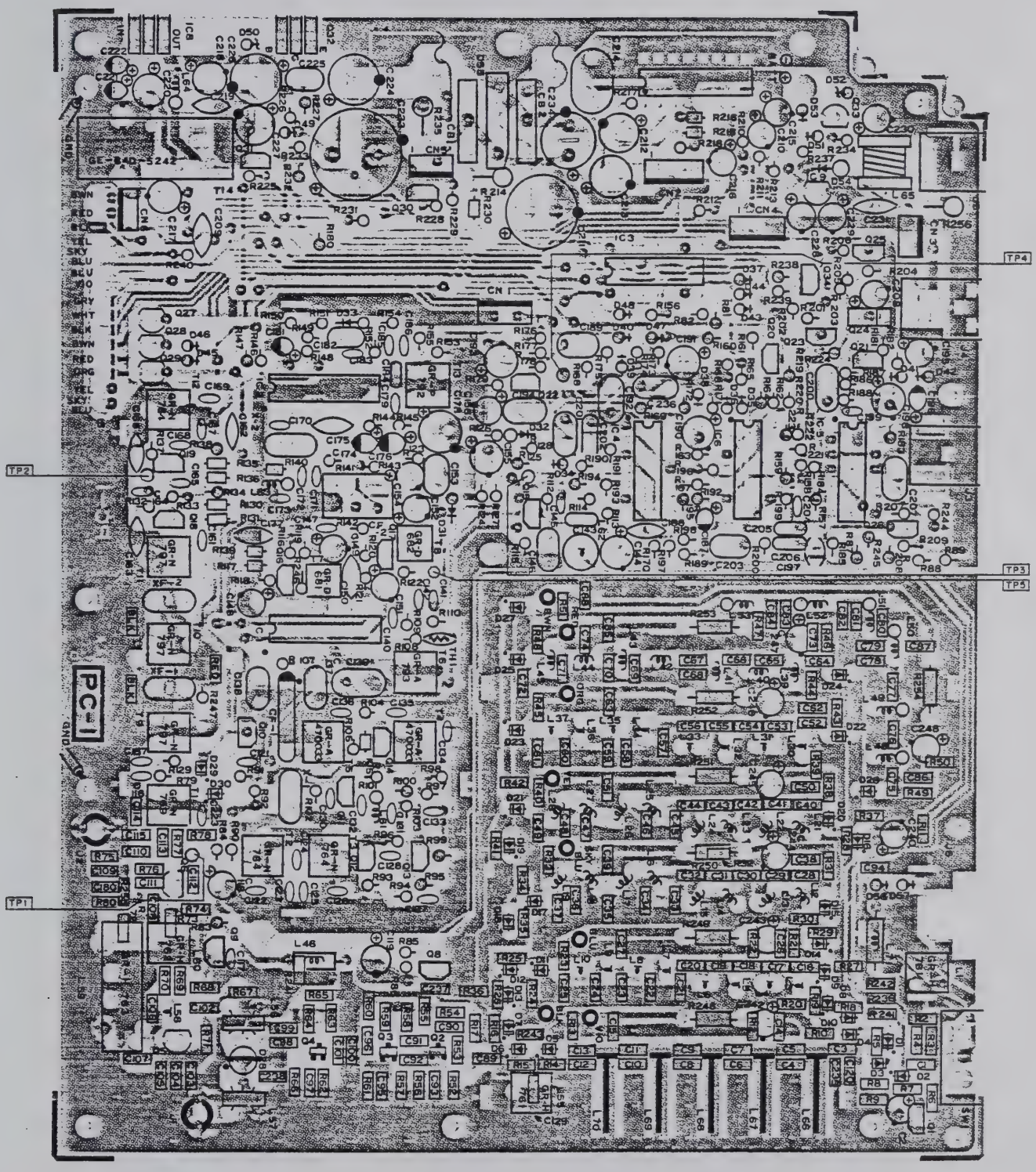
| Symptom | Cause/Remedy |
|---|---|
| 1) Does not display and no sound when POWER is ON. Volume control: MAX. Squelch control: CCW (counter-clockwise) | 1) Defective AC Line Cord: Replace.<br>2) Defective Power transformer T801: Replace.<br>3) Defective Off/Volume control VR801: Replace.<br>4) Defective Rectifier D55: Replace.<br>5) Defective voltage regulator circuit: Replace the defective components.<br>6) Defective CPU control circuit consists of Q30, Q31, Q34, D49: Replace the defective components. |
| 2) Displays but no sound. | 1) Defective speaker or headphone jack: Replace.<br>2) Defective Audio Amp. circuit consists of IC7: Replace the defective components.<br>3) Defective IF Amp. circuit consists of IC1, IC2: Replace the defective components.<br>4) Defective Squelch control circuit consists of IC3, IC4: Replace the defective components.<br>5) Defective AF Pre Amp. circuit consists of IC6: Replace the defective components.<br>6) Defective Audio Mute Switching circuit consists of IC3, IC4 and Q23, Q24, Q25: Replace the defective components.<br>7) Defective Switching circuit consists of IC4, D34, D38, D39 and D40: Replace the defective components. |
| 3) Sounds but no display | 1) IC503 is running "wild": Press RESTART Switch.<br>2) Defective initiate control circuit: Replace the defective components.<br>3) Defective voltage regulator circuit consists of IC9: Replace the defective components.<br>4) Defective LCD: Replace.<br>5) Defective CPU circuit consists of IC503: Replace the defective components.<br>6) Defective LCD Controller circuit consists of IC701: Replace the defective components. |
| 4) Backlight does not light | 1) Defective EL Driver circuit consists of T701, Q701: Replace the defective components.<br>2) Defective EL: Replace. |
| 5) Does not squelch and does not scan. | 1) Defective Switching circuit consists of IC3: Replace IC3.<br>2) Defective IC2 squelch control output terminal: Replace IC2.<br>3) Defective voltage regulator circuit consists of Q32, D50: Replace the defective components. |
| 6) Squelch operates but does not scan. | 1) IC503 is running "wild": Press RESTART Switch.<br>2) Defective CPU circuits: Replace the defective components. |
| 7) Operates in MANUAL but does not operate in SCAN. | Squelch control is not adjusted correctly: Adjust Squelch (VR802). |
| 8) Displays but PROGRAM does not operates. | Defective Keyboard or connector and/or associated circuit: Replace the defective components. |

| Symptom | Cause/Remedy |
|---|---|
| 9) No sound in AM mode but NFM, WFM operate. | 1) Defective IC502 or IC503: Replace.<br>2) Defective Switching circuit consists of Q29, D40, D45: Replace the defective components.<br>3) Defective ANL, AF Pre Amp. circuit consists of D32, Q22: Replace the defective components.<br>4) Defective AM IF DET. circuit consists of Q16, Q17, D31: Replace the defective components. |
| 10) No sound in NFM mode but AM, WFM operate. | 1) Defective IC502 or IC503: Replace.<br>2) Defective Switching circuit consists of Q28, D46: Replace the defective components. |
| 11) No sound in AM and NFM MODE but WFM operate. | 1) Defective IC2: Replace. |
| 12) No sound in WFM mode but AM, NFM operate. | 1) Defective IC502, 503 or IC1: Replace.<br>2) Defective Switching circuit consists of Q27, D47: Replace the defective components. |
| 13) Low sensitivity between 25.0000 to 39.9950 MHz. | 1) Defective DECODER SWITCHING circuit consists of IC501, Q501: Replace the defective components.<br>2) Defective Bandpass filter (B.P.F): Replace the defective components. |
| 14) Low sensitivity between 40.0000 to 67.9950 MHz. | 1) Defective DECODER SWITCHING circuit consists of IC501, Q502: Replace the defective components.<br>2) Defective B.P.F: Replace the defective components. |
| 15) Low sensitivity between 68.0000 to 107.9950 MHz. | 1) Defective DECODER SWITCHING circuit consists of IC501, Q503: Replace the defective components.<br>2) Defective B.P.F: Replace the defective components. |
| 16) Low sensitivity between 108.0000 to 173.9950 MHz. | 1) Defective DECODER SWITCHING circuit consists of IC501, Q504: Replace the defective components.<br>2) Defective B.P.F: Replace the defective components. |
| 17) Low sensitivity between 174.0000 to 279.9950 MHz. | 1) Defective DECODER SWITCHING circuit consists of IC501, Q505: Replace the defective components.<br>2) Defective B.P.F: Replace the defective components. |
| 18) Low sensitivity between 280.0000 to 520.0000 MHz. | 1) Defective DECODER SWITCHING circuit consists of IC501, Q506: Replace the defective components.<br>2) Defective B.P.F: Replace the defective components. |
| 19) Low sensitivity between 760.0000 to 1300.0000 MHz. | 1) Defective DECODER SWITCHING circuit consists of IC501, Q507: Replace the defective components.<br>2) Defective B.P.F: Replace the defective components. |
| 20) Does not operate between 25.0000 to 220.4950 MHz or 760.0000 to 1052.4950 MHz. | Defective IC503 port P10, IC502, Q315 and/or VCO-1 circuit: Replace the defective components. |

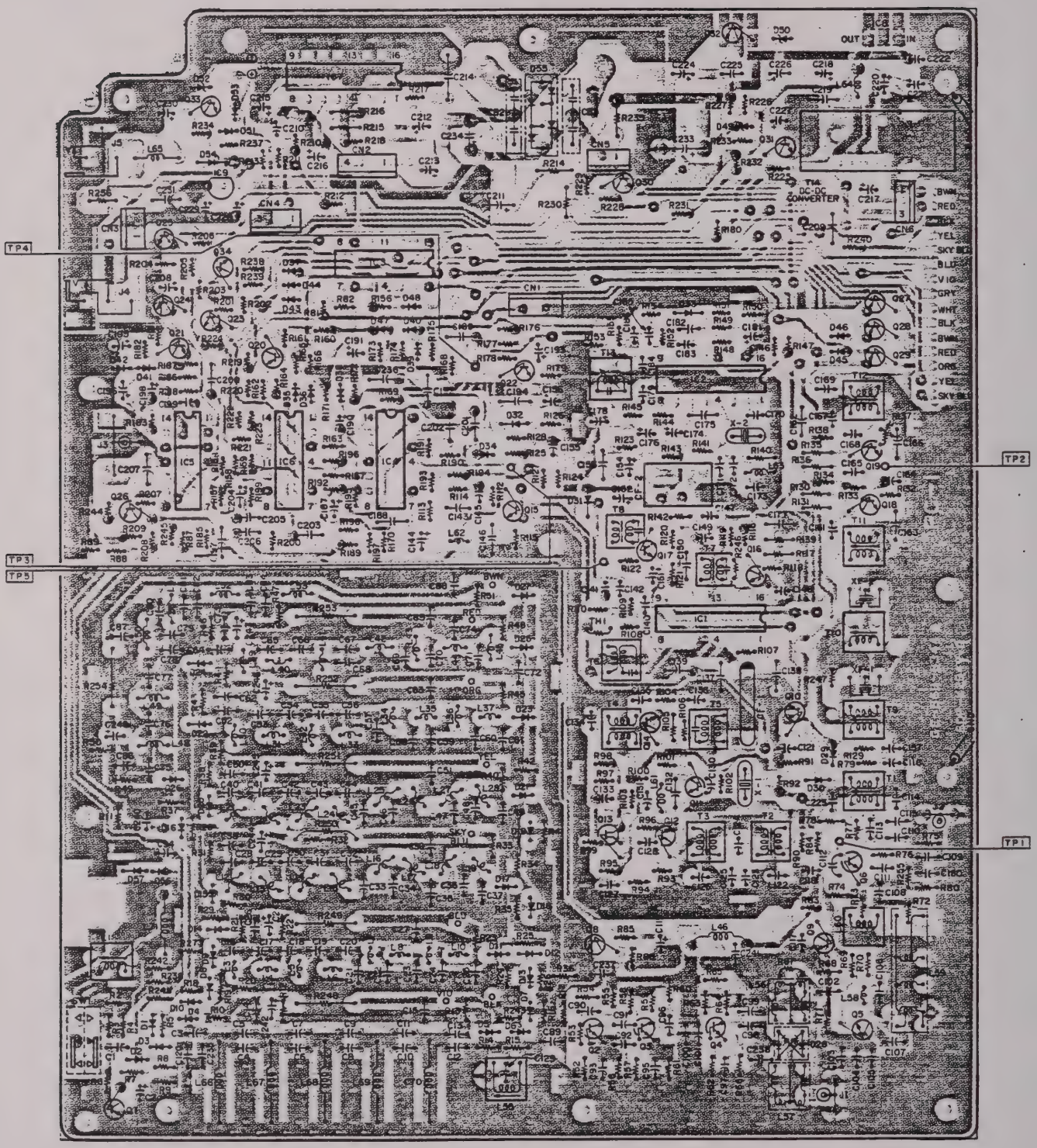
| Symptom | Cause/Remedy |
|---|---|
| 21) Does not operate between 220.5000 to 520.0000 MHz or 1052.5000 to 1300.0000 MHz. | Defective IC503 port P11, IC502, Q316 and/or VCO-2 circuit: Replace the defective components. |
| 22) Low sensitivity between 25.0000 to 520.0000 MHz. | Defective IC503 port P66, IC502, Q301 and/or VCO filter-1 circuit: Replace the defective components. |
| 23) Low sensitivity between 760.0000 to 1300.0000 MHz. | Defective IC503 port P67, IC502, Q302 and/or VCO filter-2 circuit: Replace the defective components. |
| 24) All band do not operate but display is OK. | 1) Defective PLL circuit IC301, IC302, IC303, IC304 and/or associated circuit: Replace the defective components.<br>2) Defective IC305, IC306 and/or associated circuit: Replace the defective components. |
| 25) Searches but does not halt on the correct frequency. | 1) Defective IC6: Replace.<br>2) Discriminator Coil T13 (AM and NFM mode or T6 (WFM mode) is out of adjustment:<br>TP4 shall have approx. 3.8 V in normal receiving AM and NFM mode.<br>TP3 shall have approx. 3.8 V in normal receiving WFM mode. |

# P.C. BOARDS (TOP & BOTTOM VIEWS)

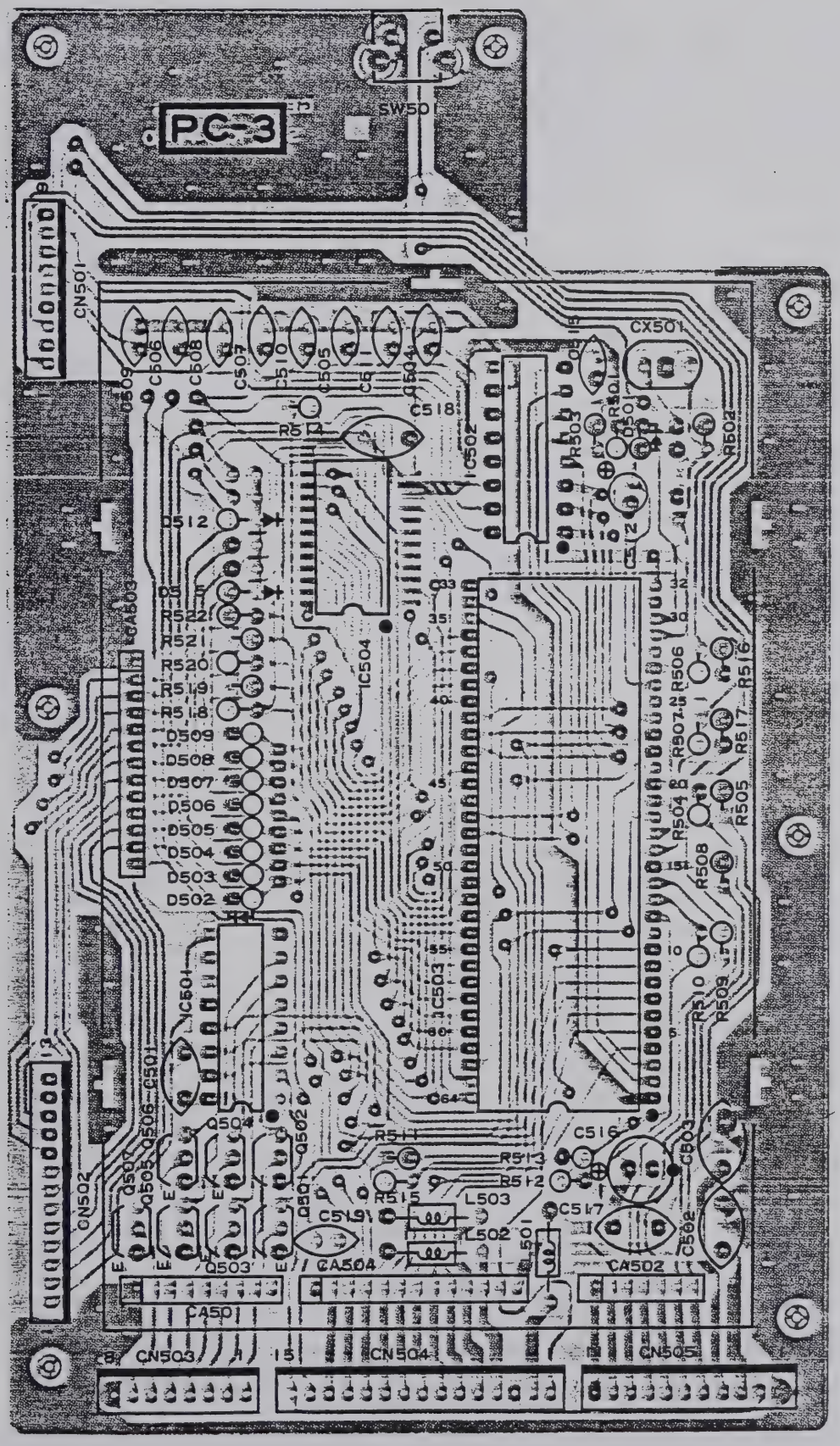
## LINEAR P.C. BOARD (TOP VIEW)



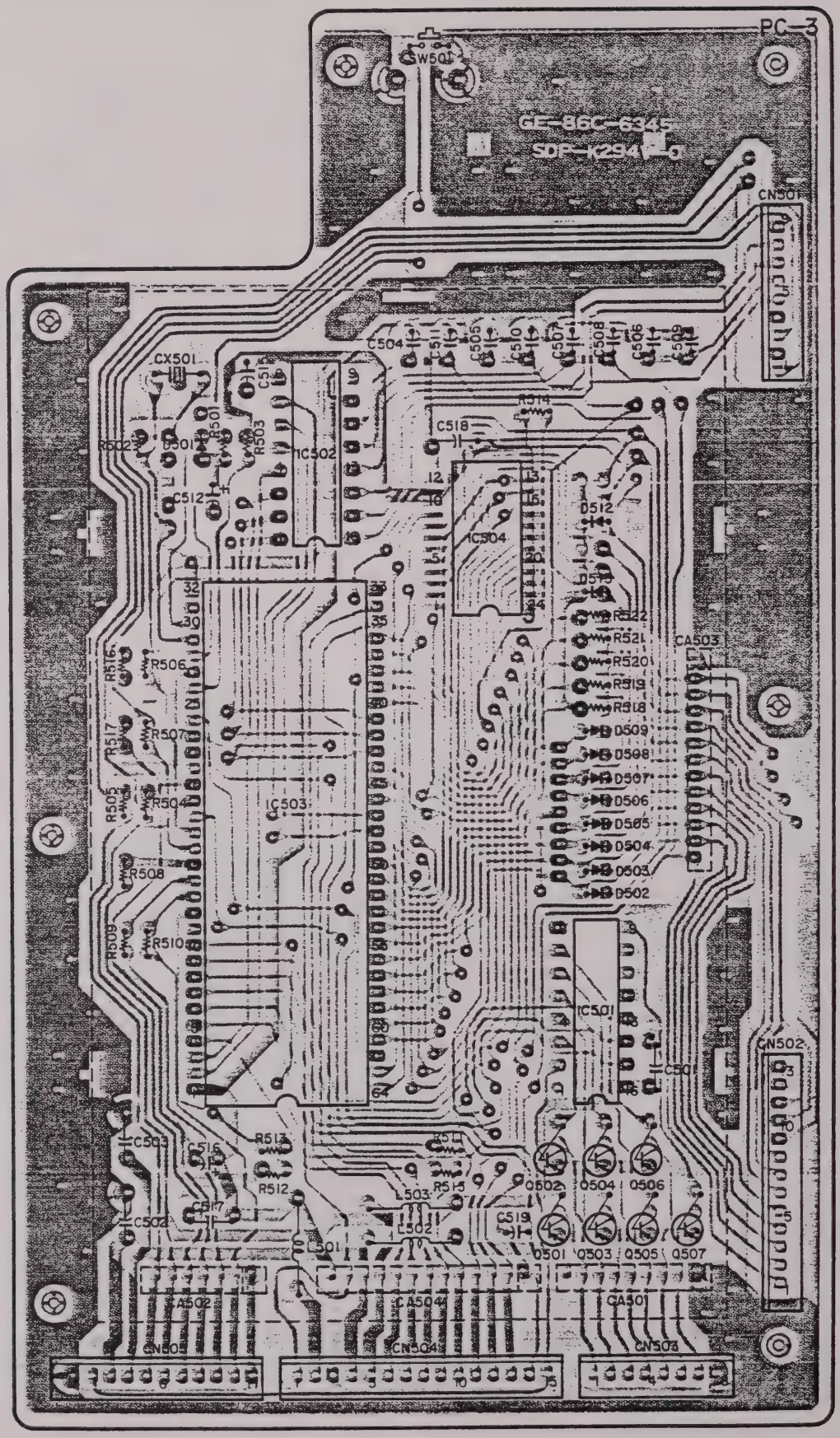
# LINEAR P.C. BOARD (BOTTOM VIEW)



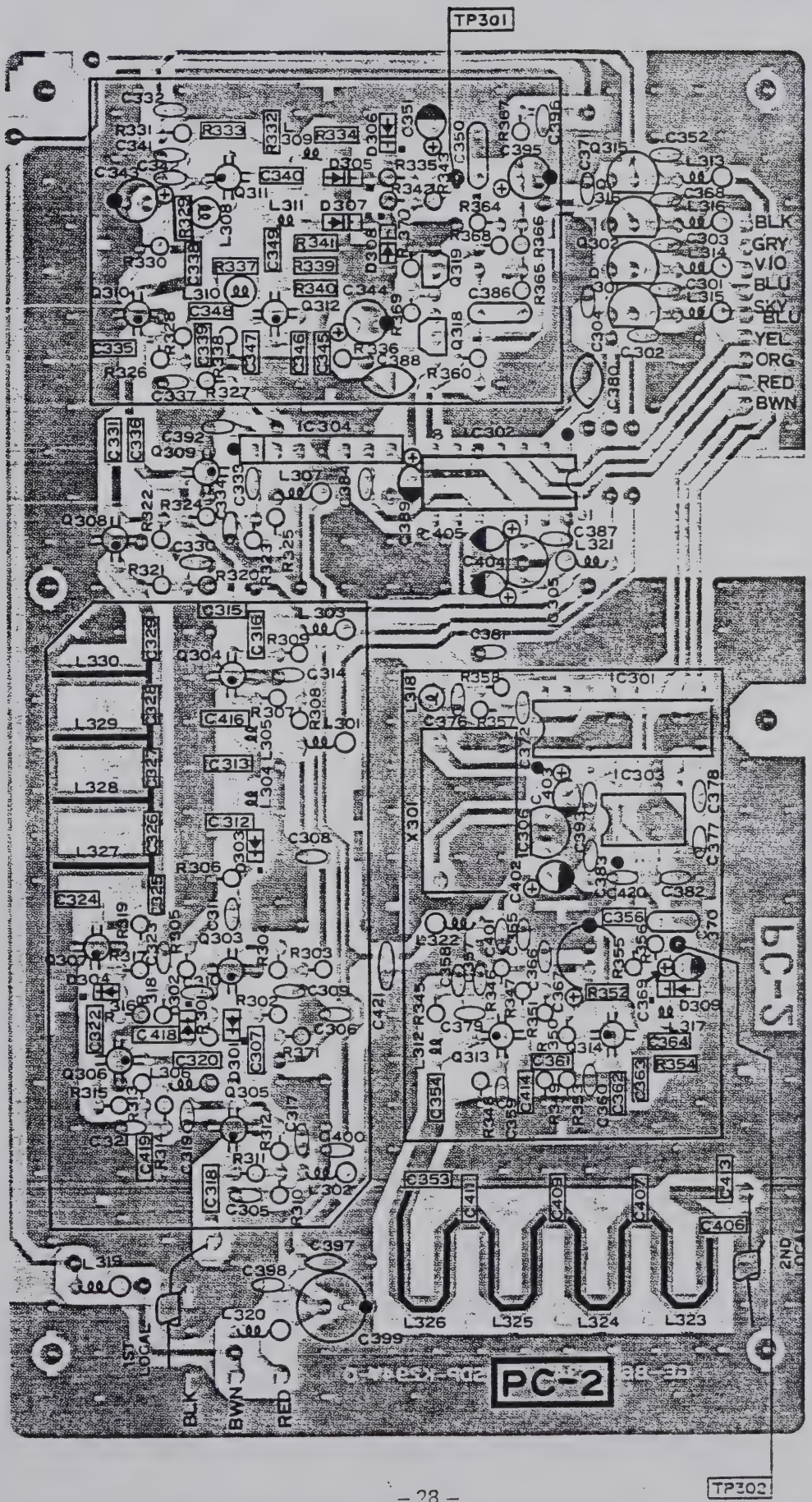
# CPU P.C. BOARD (TOP VIEW)



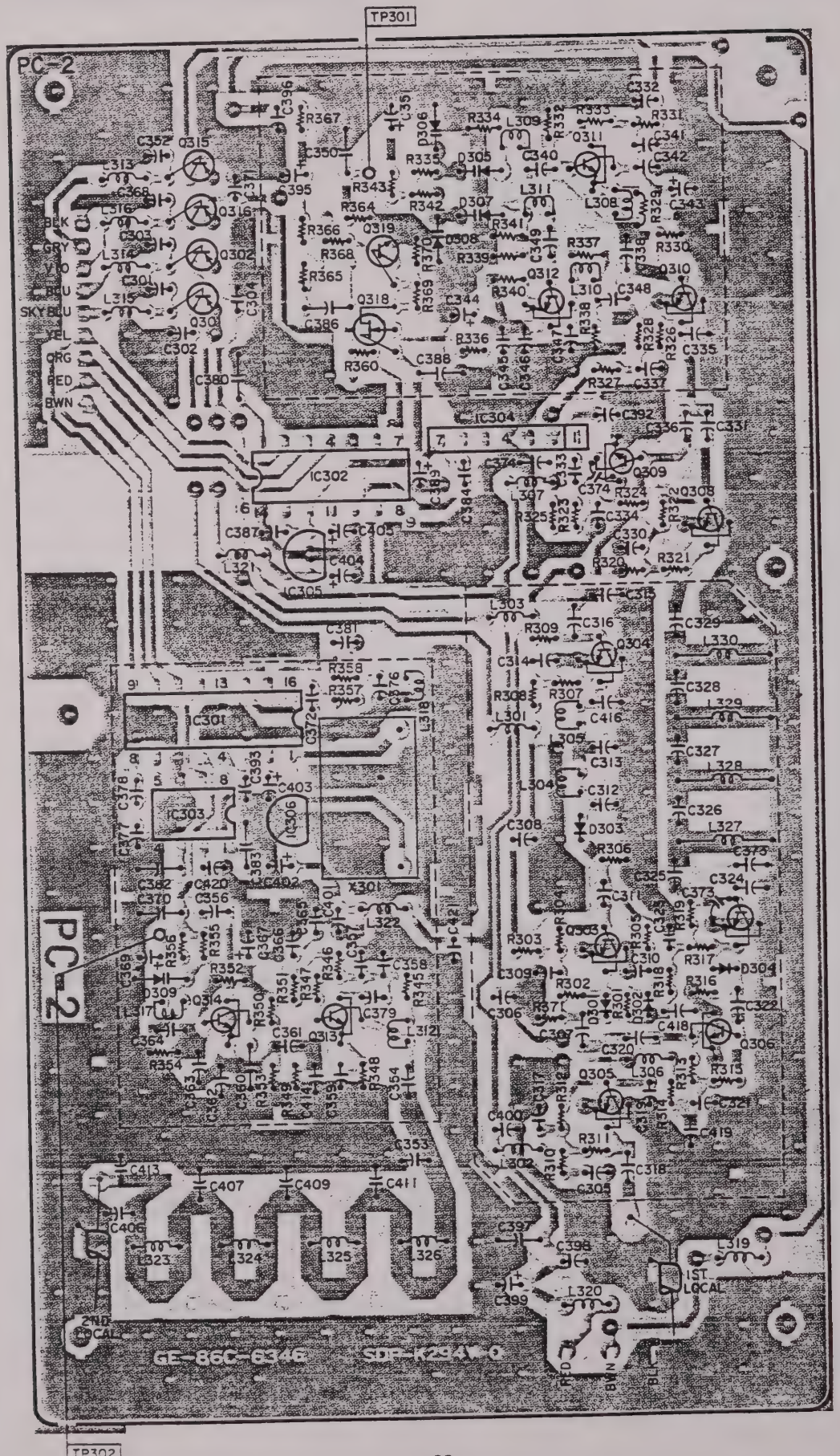
# CPU P.C. BOARD (BOTTOM VIEW)



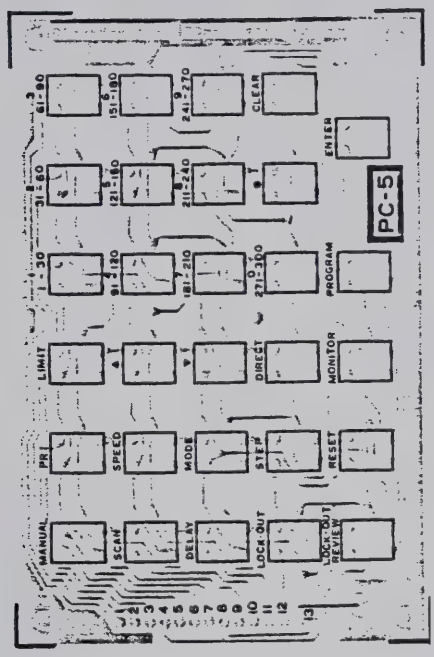
# PLL P.C. BOARD (TOP VIEW)



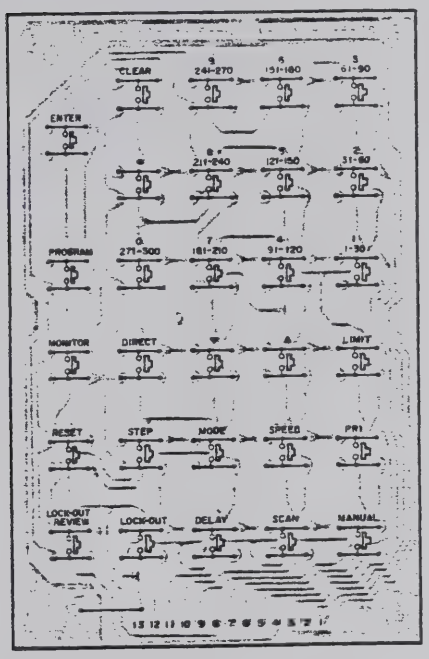
# PLL P.C. BOARD (BOTTOM VIEW)



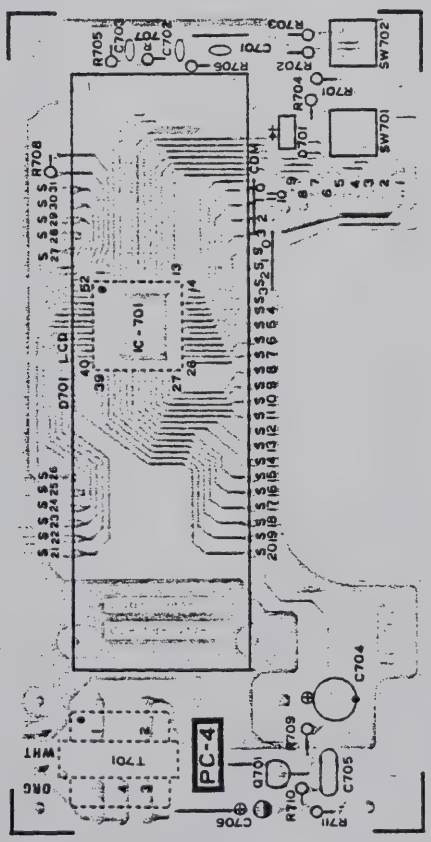
## KEY BOARD P.C. BOARD
(TOP VIEW)



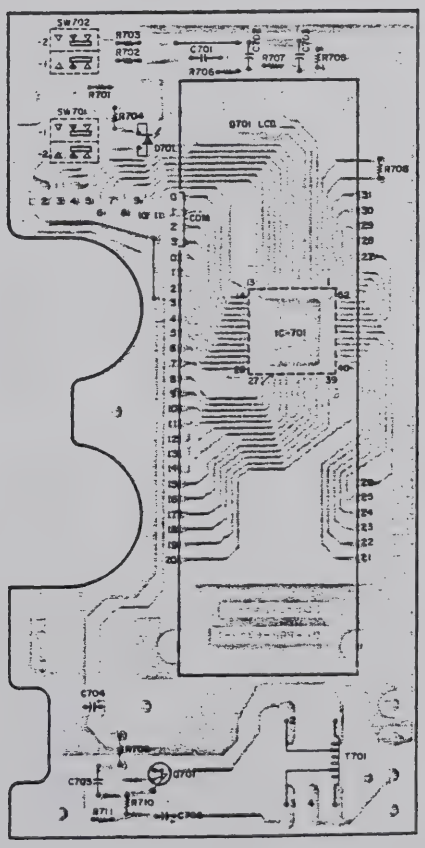

(BOTTOM VIEW)



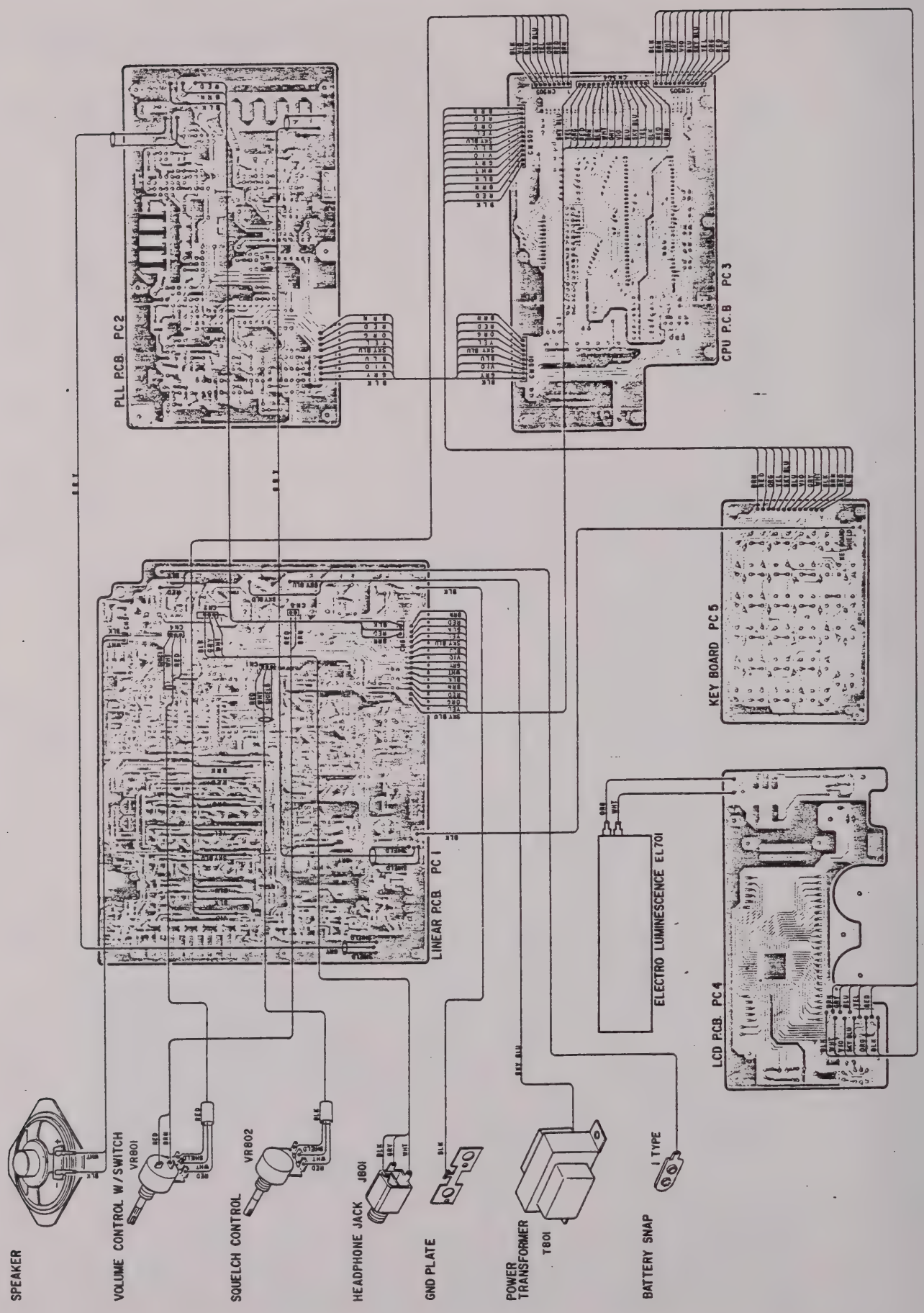

## LCD P.C. BOARD
(TOP VIEW)




(BOTTOM VIEW)



# WIRING DIAGRAM



# ELECTRICAL PARTS LIST

**PRODUCT SAFETY NOTE:** Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice of this service manual. Don't degrade the safety of the product through improper servicing.

| CAPACITORS | | | | | | |
|---|---|---|---|---|---|---|
| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
| C1 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | T1C3K31P1HC102K |
| C2 | Electrolytic | 10μF | 16WV | ±20% | CC-106MDCA | 16MV100SS |
| C3 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C4 | Chip | 0.5pF | 50WV | ±0.25pF | CD-0X5CJBC | C2C31P1HCG0R5C |
| C5 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C6 | Chip | 0.5pF | 50WV | ±0.25pF | CD-0X5CJBC | C2C31P1HCG0R5C |
| C7 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C8 | Chip | 0.5pF | 50WV | ±0.25pF | CD-0X5CJBC | C2C31P1HCG0R5C |
| C9 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C10 | Chip | 0.5pF | 50WV | ±0.25pF | CD-0X5CJBC | C2C31P1HCG0R5C |
| C11 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C12 | Chip | 0.5pF | 50WV | ±0.25pF | CD-0X5CJBC | C2C31P1HCG0R5C |
| C13 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C14 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C15 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C16 | Chip | 12pF | 50WV | ±5% | CD-120JJBC | C2C31P1HCG120J |
| C17 | Chip | 6pF | 50WV | ±0.5pF | CD-060DJBC | C2C31P1HCG060D |
| C18 | Chip | 6pF | 50WV | ±0.5pF | CD-060DJBC | C2C31P1HCG060D |
| C19 | Chip | 6pF | 50WV | ±0.5pF | CD-060DJBC | C2C31P1HCG060D |
| C20 | Chip | 12pF | 50WV | ±5% | CD-120JJBC | C2C31P1HCG120J |
| C21 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C22 | Chip | 12pF | 50WV | ±5% | CD-120JJBC | C2C31P1HCG120J |
| C23 | Chip | 15pF | 50WV | ±5% | CD-150JJBC | C2C31P1HCG150J |
| C24 | Chip | 12pF | 50WV | ±5% | CD-120JJBC | C2C31P1HCG120J |
| C25 | Chip | 10pF | 50WV | ±0.5pF | CD-100DJBC | C2C31P1HCG100D |
| C26 | Chip | 0.001μF | 50WV | ±10% | CD-120KJBC | C3K31P1HC102K |
| C27 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C28 | Chip | 12pF | 50WV | ±5% | CD-120JJBC | C2C31P1HCG120J |
| C29 | Chip | 6pF | 50WV | ±0.5pF | CD-060DJBC | C2C31P1HCG060D |
| C30 | Chip | 6pF | 50WV | ±0.5pF | CD-060DJBC | C2C31P1HCG060D |
| C31 | Chip | 6pF | 50WV | ±0.5pF | CD-060DJBC | C2C31P1HCG060D |
| C32 | Chip | 12pF | 50WV | ±5% | CD-102JJBC | C2C31P1HCG120J |
| C33 | Chip | 8pF | 50WV | ±0.5pF | CD-080CJBC | C2C31P1HCG080D |
| C34 | Chip | 22pF | 50WV | ±5% | CD-220JJBC | C2C31P1HCG220J |
| C35 | Chip | 22pF | 50WV | ±5% | CD-220JJBC | C2C31P1HCG220J |
| C36 | Chip | 22pF | 50WV | ±5% | CD-220JJBC | C2C31P1HCG220J |
| C37 | Chip | 8pF | 50WV | ±0.5pF | CD-080CJBC | C2C31P1HCG080D |
| C38 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C39 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C40 | Chip | 27pF | 50WV | ±5% | CD-270JJBC | C2C31P1HCG270J |
| C41 | Chip | 12pF | 50WV | ±5% | CD-120JJBC | C2C31P1HCG120J |
| C42 | Chip | 12pF | 50WV | ±5% | CD-120JJBC | C2C31P1HCG120J |
| C43 | Chip | 12pF | 50WV | ±5% | CD-120JJBC | C2C31P1HCG120J |
| C44 | Chip | 27pF | 50WV | ±5% | CD-270JJBC | C2C31P1HCG270J |
| C45 | Chip | 22pF | 50WV | ±5% | CD-220JJBC | C2C31P1HCG220J |
| C46 | Chip | 39pF | 50WV | ±5% | CD-390JJBC | C2C31P1HCG390J |
| C47 | Chip | 47pF | 50WV | ±5% | CD-470JJBC | C2C31P1HCG470J |
| C48 | Chip | 39pF | 50WV | ±5% | CD-390JJBC | C2C31P1HCG390J |
| C49 | Chip | 22pF | 50WV | ±5% | CD-220JJBC | C2C31P1HCG220J |
| C50 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C51 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C52 | Chip | 39pF | 50WV | ±5% | CD-390JJBC | C2C31P1HCG390J |

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| C53 | Chip | 18pF | 50WV | ±5% | CD-180JJBC | C2C31P1HCG180J |
| C54 | Chip | 18pF | 50WV | ±5% | CD-180JJBC | C2C31P1HCG180J |
| C55 | Chip | 18pF | 50WV | ±5% | CD-180JJBC | C2C31P1HCG180J |
| C56 | Chip | 39pF | 50WV | ±5% | CD-390JJBC | C2C31P1HCG390J |
| C57 | Chip | 33pF | 50WV | ±5% | CD-330JJBC | C2C31P1HCG330J |
| C58 | Chip | 68pF | 50WV | ±5% | CD-680JJBC | C2C31P1HCG680J |
| C59 | Chip | 68pF | 50WV | ±5% | CD-680JJBC | C2C31P1HCG680J |
| C60 | Chip | 68pF | 50WV | ±5% | CD-680JJBC | C2C31P1HCG680J |
| C61 | Chip | 22pF | 50WV | ±5% | CD-220JJBC | C2C31P1HCG220J |
| C62 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C63 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C64 | Chip | 68pF | 50WV | ±5% | CD-680JJBC | C2C31P1HCG680J |
| C65 | Chip | 27pF | 50WV | ±5% | CD-270JJBC | C2C31P1HCG270J |
| C66 | Chip | 27pF | 50WV | ±5% | CD-270JJBC | C2C31P1HCG270J |
| C67 | Chip | 68pF | 50WV | ±5% | CD-680JJBC | C2C31P1HCG680J |
| C68 | Chip | 47pF | 50WV | ±5% | CD-470JJBC | C2C31P1HCG470J |
| C69 | Chip | 100pF | 50WV | ±5% | CD-101JJBC | C2C31P1HCG101J |
| C70 | Chip | 100pF | 50WV | ±5% | CD-101JJBC | C2C31P1HCG101J |
| C71 | Chip | 100pF | 50WV | ±5% | CD-101JJBC | C2C31P1HCG101J |
| C72 | Chip | 27pF | 50WV | ±5% | CD-270JJBC | C2C31P1HCG270J |
| C73 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C74 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C75 | Chip | 220pF | 50WV | ±5% | CD-221JJBC | C2C31P1HCG221J |
| C76 | Chip | 47pF | 50WV | ±5% | CD-470JJBC | C2C31P1HCG470J |
| C77 | Chip | 68pF | 50WV | ±5% | CD-680JJBC | C2C31P1HCG680J |
| C78 | Chip | 68pF | 50WV | ±5% | CD-680JJBC | C2C31P1HCG680J |
| C79 | Chip | 150pF | 50WV | ±5% | CD-151JJBC | C2C31P1HCG151J |
| C80 | Chip | 20pF | 50WV | ±5% | CD-200JJBC | C2C31P1HCG200J |
| C81 | Chip | 150pF | 50WV | ±5% | CD-151JJBC | C2C31P1HCG151J |
| C82 | Chip | 20pF | 50WV | ±5% | CD-200JJBC | C2C31P1HCG200J |
| C83 | Chip | 150pF | 50WV | ±5% | CD-151JJBC | C2C31P1HCG151J |
| C84 | Chip | 20pF | 50WV | ±5% | CD-200JJBC | C2C31P1HCG200J |
| C85 | Chip | 47pF | 50WV | ±5% | CD-470JJBC | C2C31P1HCG470J |
| C86 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C87 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C88 | Chip | 0.01μF | 50WV | ±10% | CD-103KJBC | C3K31P1HC103K |
| C89 | Chip | 100pF | 50WV | ±5% | CD-101JJBC | C2C31P1HCG101J |
| C90 | Chip | 10pF | 50WV | ±0.5pF | CD-100DJBC | C2C31P1HCG100D |
| C91 | Chip | 100pF | 50WV | ±5% | CD-101JJBC | C2C31P1HCG101J |
| C92 | Chip | 4pF | 50WV | ±0.5pF | CD-040CJBC | C2C31P1HCG040D |
| C93 | Chip | 10pF | 50WV | ±0.5pF | CD-100DJBC | C2C31P1HCG100D |
| C94 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C95 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C96 | Chip | 100pF | 50WV | ±5% | CD-101JJBC | C2C31P1HCG101J |
| C97 | Chip | 6pF | 50WV | ±0.5pF | CD-060DJBC | C2C31P1HCG060D |
| C98 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C99 | Chip | 100pF | 50WV | ±5% | CD-101JJBC | C2C31P1HCG101J |
| C100 | Chip | 100pF | 50WV | ±5% | CD-101JJBC | C2C31P1HCG101J |
| C101 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C102 | Chip | 33pF | 50WV | ±5% | CD-330JJBC | C2C31P1HCG330J |
| C103 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C104 | Chip | 22pF | 50WV | ±5% | CD-220JJBC | C2C31P1HCG220J |
| C105 | Chip | 0.01μF | 50WV | ±10% | CD-103KJBC | C3K31P1HC103K |
| C106 | Chip | 470pF | 50WV | ±5% | CC-471JJBC | C2C31P1HCG471J |
| C107 | Chip | 33pF | 50WV | ±5% | CD-330JJBC | C2C31P1HCG330J |
| C108 | Chip | 33pF | 50WV | ±5% | CD-330JJBC | C2C31P1HCG330J |
| C109 | Chip | 22pF | 50WV | ±5% | CD-220JJBC | C2C31P1HCG220J |

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| C110 | Chip | 10pF | 50WV | ±0.5pF | CD-100DJBC | C2C31P1HCG100D |
| C111 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C112 | Chip | 5pF | 50WV | ±0.5pF | CC-050CJBC | C2C31P1HCG050D |
| C113 | Chip | 18pF | 50WV | ±5% | CD-180JJBC | C2C31P1HCG180J |
| C114 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C115 | Chip | 33pF | 50WV | ±5% | CC-330JJBC | C2C31P1HCG330J |
| C116 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C117 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C118 | Electrolytic | 10μF | 16WV | ±20% | CC-106MDCA | 16MV100HA |
| C119 | Electrolytic | 33μF | 16WV | ±20% | CC-336MDCA | 16MV330HA |
| C120 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C121 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C122 | Ceramic | 10pF | 50WV | ±0.5pF | CC-100DJBC | HE40SJSL100D |
| C123 | Ceramic | 10pF | 50WV | ±10% | CC-100DJBC | HE40SJUJ100K |
| C124 | Ceramic | 1pF | 50WV | ±0.5pF | CC-010CJBC | HE40SJCH010D |
| C125 | Ceramic | 10pF | 50WV | ±10% | CC-100DJBC | HE40SJUJ100K |
| C126 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C127 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C128 | Ceramic | 10pF | 50WV | ±0.5pF | CC-100DJBC | HE40SJSL100D |
| C129 | Chip | 2pF | 50WV | ±0.5pF | CC-020DJBC | C2C31P1HCG020D |
| C130 | Ceramic | 22pF | 50WV | ±10% | CC-220KJBC | HE40SJSL220K |
| C131 | Ceramic | 56pF | 50WV | ±10% | CC-560JJBC | HE40SJSL560K |
| C132 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C133 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C134 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C135 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C136 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C137 | Mylar* | 0.047μF | 50WV | ±10% | CC-473KJBM | AK1-UU473K50 |
| C138 | Mylar | 0.047μF | 50WV | ±10% | CC-473KJBM | AK1-UU473K50 |
| C139 | Mylar | 0.1μF | 50WV | ±10% | CC-104KJBM | AK1-UU104K50 |
| C140 | Ceramic | 470pF | 50WV | ±10% | CC-471KJBC | HE40SJYB471K |
| C141 | Ceramic | 100pF | 50WV | ±10% | CC-101KJBC | HE40SJYB101K |
| C142 | Ceramic | 470pF | 50WV | ±10% | CC-471KJBC | HE40SJYB471K |
| C143 | Mylar | 0.0022μF | 50WV | ±10% | CC-222KJBM | AK1-UU222K50 |
| C144 | Electrolytic | 10μF | 16WV | ±20% | CC-106MDCA | 16MV100HA |
| C145 | Ceramic | 47pF | 50WV | ±10% | CC-470KJBC | HE40SJSL470K |
| C146 | Mylar | 0.047μF | 50WV | ±10% | CC-473KJBM | AK1-UU473K50 |
| C147 | Ceramic | 470pF | 50WV | ±10% | CC-471KJBC | HE40SJYB471K |
| C148 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C149 | Electrolytic | 10μF | 16WV | ±20% | CC-106MDCA | 16MV100HA |
| C150 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C151 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C152 | Electrolytic | 10μF | 16WV | ±20% | CC-106MDCA | 16MV100HA |
| C153 | Mylar | 0.056μF | 50WV | ±10% | CC-563KJBM | AK1-UU563K50 |
| C154 | Electrolytic | 22μF | 16WV | ±20% | CC-226MDCA | 16MV220HA |
| C155 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C156 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C157 | Ceramic | 33pF | 50WV | ±10% | CC-330KJBC | HE40SJSL330K |
| C158 | Not used | | | | | |
| C159 | Not used | | | | | |
| C160 | Not used | | | | | |
| C161 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C162 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C163 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C164 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C165 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C166 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |

* Mylar is a registered trademark of E.I. Du Pont de Nemours and Company.

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| C167 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C168 | Ceramic | 10pF | 50WV | ±10% | CC-100DJBC | HE40SJUJ100K |
| C169 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C170 | Ceramic | 33pF | 50WV | ±10% | CC-330KJBC | HE40SJSL330K |
| C171 | Ceramic | 10pF | 50WV | ±0.5pF | CC-100DJBC | HE40SJSL100D |
| C172 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C173 | Ceramic | 10pF | 50WV | ±0.5pF | CC-100DJBC | HE40SJSL100D |
| C174 | Tantalum | 0.47μF | 35WV | ±20% | CC-474MGBT | DN1VR47M1S |
| C175 | Ceramic | 0.047μF | 50WV | +80%–20% | CC-473ZJBC | HE13SJYF473Z |
| C176 | Tantalum | 0.1μF | 35WV | ±20% | CC-104MGBT | DN1V0R1M1S |
| C177 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C178 | Electrolytic | 220μF | 16WV | ±20% | CC-227MDCA | 16MV221HA |
| C179 | Ceramic | 10pF | 50WV | ±0.5pF | CC-100DJBC | HE40SJSL100D |
| C180 | Chip | 5pF | 50WV | ±0.5pF | CD-050DJBC | C2C31P1HCG050D |
| C181 | Tantalum | 0.22μF | 35WV | ±20% | CC-224MGBT | DN1VR22M1S |
| C182 | Mylar | 0.01μF | 50WV | ±10% | CC-103KJBM | AK1-UU103K50 |
| C183 | Ceramic | 5pF | 50WV | ±0.5pF | CC-050CJBC | HE40SJSL050D |
| C184 | Mylar | 0.0068μF | 50WV | ±10% | CC-682KJBM | AK1-UU682K50 |
| C185 | Ceramic | 470pF | 50WV | ±10% | CC-471KJBC | HE40SJYB471K |
| C186 | Ceramic | 470pF | 50WV | ±10% | CC-471KJBC | HE40SJYB471K |
| C187 | Tantalum | 0.1μF | 35WV | ±20% | CC-104MGBT | DN1V0R1M1S |
| C188 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C189 | Mylar | 0.047μF | 50WV | ±10% | CC-473KJBM | AK1-UU473K50 |
| C190 | Electrolytic | 0.1μF | 50WV | ±20% | CC-104MJBA | 50MVR10HA |
| C191 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C192 | Mylar | 0.056μF | 50WV | ±10% | CC-563KJBM | AK1-UU563K50 |
| C193 | Electrolytic | 0.1μF | 50WV | ±20% | CC-104MJBA | 50MVR10HA |
| C194 | Mylar | 0.056μF | 50WV | ±10% | CC-563KJBM | AK1-UU563K50 |
| C195 | Electrolytic | 4.7μF | 25WV | ±20% | CC-475MFBA | 25MV4R7HA |
| C196 | Tantalum | 0.1μF | 35WV | ±20% | CC-104MGBT | DN1V0R1M1S |
| C197 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C198 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C199 | Ceramic | 330pF | 50WV | ±10% | CC-331KJBC | HE40SJYB331K |
| C200 | Mylar | 0.082μF | 50WV | ±10% | CC-823KJBM | AK1-UU823K50 |
| C201 | Mylar | 0.056μF | 50WV | ±10% | CC-563KJBM | AK1-UU563K50 |
| C202 | Mylar | 0.0047μF | 50WV | ±10% | CC-472KJBM | AK1-UU472K50 |
| C203 | Mylar | 0.047μF | 50WV | ±10% | CC-473KJBM | AK1-UU473K50 |
| C204 | Ceramic | 0.0015μF | 50WV | ±10% | CC-152KJBC | HE60SJYB152K |
| C205 | Mylar | 0.0068μF | 50WV | ±10% | CC-682KJBM | AK1-UU682K50 |
| C206 | Mylar | 0.0068μF | 50WV | ±10% | CC-682KJBM | AK1-UU682K50 |
| C207 | Mylar | 0.047μF | 50WV | ±10% | CC-473KJBM | AK1-UU473K50 |
| C208 | Electrolytic | 2.2μF | 50WV | ±20% | CC-225MJBA | 50MV2R2HA |
| C209 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C210 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010SS |
| C211 | Electrooytic | 1000μF | 25WV | ±20% | CC-108MFBA | 25MV102HA |
| C212 | Electrolytic | 47μF | 16WV | ±20% | CC-476MDCA | 16MV470SS |
| C213 | Electrolytic | 100μF | 16WV | ±20% | CC-107MDCA | 16MV101HA |
| C214 | Mylar | 0.22μF | 50WV | ±10% | CC-224KJBM | AK1-UU224K50 |
| C215 | Electrolytic | 10μF | 16WV | ±20% | CC-106MDCA | 16MV100SS |
| C216 | Electrolytic | 2.2μF | 50WV | ±20% | CC-225MJBA | 50MV2R2SS |
| C217 | Electrolytic | 10μF | 50WV | ±20% | CC-106MJBA | 50MV100HA |
| C218 | Electrolytic | 33μF | 16WV | ±20% | CC-336MDCA | 16MV330HA |
| C219 | Ceramic | 0.047μF | 50WV | +80%–20% | CC-473ZJBC | HE13SJYF473Z |
| C220 | Electrolytic | 33μF | 16WV | ±20% | CC-336MDCA | 16MV330HA |
| C221 | Tantalum | 0.1μF | 35WV | ±20% | CC-104MGBT | DN1V0R1M1S |
| C222 | Tantalum | 0.33μF | 35WV | ±20% | CC-334MGBT | DN1VR33M1S |
| C223 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| C224 | Electrolytic | 220μF | 16WV | ±20% | CC-227MDCA | 16MV221HA |
| C225 | Mylar | 0.033μF | 50WV | ±10% | CC-333KJBM | AK1-UU333K50 |
| C226 | Electrolytic | 220μF | 16WV | ±20% | CC-227MDCA | 16MV221HA |
| C227 | Electrolytic | 100μF | 16WV | ±20% | CC-107MDCA | 16MV101HA |
| C228 | Electrolytic | 0.1μF | 50WV | ±20% | CC-104MJBA | 50MVR10SS |
| C229 | Electrolytic | 0.1μF | 50WV | ±20% | CC-104MJBA | 50MVR10SS |
| C230 | Electrolytic | 10μF | 16WV | ±20% | CC-106MDCA | 16MV100HA |
| C231 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C232 | Not used | | | | | |
| ⚠C233 | Electrolytic | 2200μF | 25WV | ±20% | CC-228MFBA | 25MV222HA |
| C234 | Electrolytic | 470μF | 25WV | ±20% | CC-477MFBA | 25MV471HA |
| C235 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C236 | Mylar | 0.022μF | 50WV | ±10% | CC-273KJBM | AK1-UU223K50 |
| C237 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C238 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C239 | Not used | | | | | |
| C240 | Electrolytic | 33μF | 16WV | ±20% | CC-336MDCA | 16MV330HA |
| C241 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C242 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C243 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C244 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C245 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C246 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C247 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C248 | Electrolytic | 1μF | 50WV | ±20% | CC-105MJBA | 50MV010HA |
| C301 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C302 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C303 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C304 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C305 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C306 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C307 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C308 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C309 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C310 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C311 | Ceramic | 5pF | 50WV | ±0.5pF | CC-050CJBC | HE40SJSL050D |
| C312 | Chip | 3pF | 50WV | ±0.5pF | CD-030CJBC | C2C31P1HCG030D |
| C313 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C314 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C315 | Chip | 4pF | 50WV | ±0.5pF | CD-040CJBC | C2C31P1HCG040D |
| C316 | Chip | 10pF | 50WV | ±0.5pF | CD-100DJBC | C2C31P1HCG100D |
| C317 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C318 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C319 | Ceramic | 1pF | 50WV | ±0.5pF | CC-010CJBC | HE40SJSL010D |
| C320 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C321 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C322 | Chip | 1pF | 50WV | ±0.25pF | CD-010CJBC | C2C31P1HCG010C |
| C323 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C324 | Chip | 0.5pF | 50WV | ±0.25pF | CD-0X5CJBC | C2C31P1HCG0R5C |
| C325 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C326 | Chip | 1pF | 50WV | ±0.25pF | CD-010CJBC | C2C31P1HCG010C |
| C327 | Chip | 1pF | 50WV | ±0.25pF | CD-010CJBC | C2C31P1HCG010C |
| C328 | Chip | 1pF | 50WV | ±0.25pF | CD-010CJBC | C2C31P1HCG010C |
| C329 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C330 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C331 | Chip | 3pF | 50WV | ±0.5pF | CD-030CJBC | C2C31P1HCG030D |
| C332 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| C333 | Ceramic | 5pF | 50WV | ±0.5pF | CC-050CJBC | HE40SJSL050D |
| C334 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C335 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C336 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C337 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C338 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C339 | Not used | | | | | |
| C340 | Chip | 22pF | 50WV | ±0.5pF | CD-220DJBC | C2C31P1HCG220D |
| C341 | Ceramic | 22pF | 50WV | ±10% | CC-220KJBC | HE40SJSL220K |
| C342 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C343 | Electrolytic | 10μF | 16WV | ±20% | CC-106MDCA | 16MV100HA |
| C344 | Electrolytic | 10μF | 16WV | ±20% | CC-106MDCA | 16MV100HA |
| C345 | Chip | 0.001μF | 50WV | ±10% | CD-102KJBC | C3K31P1HC102K |
| C346 | Chip | 22pF | 50WV | ±0.5pF | CD-220DJBC | C2C31P1HCG220D |
| C347 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C348 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C349 | Chip | 10pF | 50WV | ±0.5pF | CD-100DJBC | C2C31P1HCG100D |
| C350 | Mylar | 0.047μF | 50WV | ±10% | CC-473KJBM | AK1-UU473K50 |
| C351 | Tantalum | 0.1μF | 35WV | ±20% | CC-104MGBT | DN1V0R1M1S |
| C352 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C353 | Chip | 4pF | 50WV | ±0.5pF | CD-040CJBC | C2C31P1HCG040D |
| C354 | Chip | 10pF | 50WV | ±0.5pF | CD-100DJBC | C2C31P1HCG100D |
| C355 | Not used | | | | | |
| C356 | Chip | 0.5pF | 50WV | ±0.25pF | CD-0X5CJBC | C2C31P1HCG0R5C |
| C357 | Ceramic | 33pF | 50WV | ±10% | CC-330KJBC | HE40SJSL330K |
| C358 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C359 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C360 | Ceramic | 100pF | 50WV | ±10% | CC-101KJBC | HE50SJSL101K |
| C361 | Chip | 2pF | 50WV | ±0.5pF | CD-020DJBC | C2C31P1HCG020D |
| C362 | Chip | 6pF | 50WV | ±0.5pF | CD-060DJBC | C2C31P1HCG060D |
| C363 | Chip | 10pF | 50WV | ±0.5pF | CD-100DJBC | C2C31P1HCG100D |
| C364 | Chip | 10pF | 50WV | ±0.5pF | CD-100DJBC | C2C31P1HCG100D |
| C365 | Ceramic | 33pF | 50WV | ±10% | CC-330KJBC | HE40SJSL330K |
| C366 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C367 | Electrolytic | 220μF | 16WV | ±20% | CC-227MDCA | 16MV221HA |
| C368 | Ceramic | 0.001μF | 50WV | ±10% | CD-102KJBC | HE50SJYB102K |
| C369 | Tantalum | 0.47μF | 35WV | ±20% | CC-474MGBT | DN1VR47M1S |
| C370 | Mylar | 0.047μF | 50WV | ±10% | CC-473KJBM | AK1-UU473K50 |
| C371 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C372 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C373 | Chip | 1pF | 50WV | ±0.25pF | CD-010CJBC | C2C31P1HCG010C |
| C374 | Chip | 5pF | 50WV | ±0.5pF | CD-050CJBC | C2C31P1HCG050D |
| C375 | Not used | | | | | |
| C376 | Ceramic | 22pF | 50WV | ±10% | CC-220KJBC | HE40SJSL220K |
| C377 | Ceramic | 5pF | 50WV | ±0.5pF | CC-050CJBC | HE40SJSL050D |
| C378 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C379 | Ceramic | 100pF | 50WV | ±10% | CC-101KJBC | HE50SJSL101K |
| C380 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C381 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C382 | Ceramic | 0.0022μF | 50WV | ±10% | CC-222KJBC | HE60SJYB222K |
| C383 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C384 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C385 | Not used | | | | | |
| C386 | Mylar | 0.047μF | 50WV | ±10% | CC-473KJBM | AK1-UU473K50 |
| C387 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C388 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C389 | Tantalum | 0.1μF | 35WV | ±20% | CC-104MGBT | DN1V0R1M1S |

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| C390 | Not used | | | | | |
| C391 | Not used | | | | | |
| C392 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C393 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C394 | Not used | | | | | |
| C395 | Electrolytic | 10μF | 50WV | ±20% | CC-106MJBA | 50MV100HA |
| C396 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C397 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C398 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C399 | Electrolytic | 220μF | 16WV | ±20% | CC-227MDCA | 16MV221HA |
| C400 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C401 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C402 | Tantalum | 0.33μF | 35WV | ±20% | CC-334MGBT | DN1VR33M1S |
| C403 | Tantalum | 0.1μF | 35WV | ±20% | CC-104MGBT | DN1V0R1M1S |
| C404 | Tantalum | 0.33μF | 35WV | ±20% | CC-334MGBT | DN1VR33M1S |
| C405 | Tantalum | 0.1μF | 35WV | ±20% | CC-104MGBT | DN1V0R1M1S |
| C406 | Chip | 4pF | 50WV | ±0.5pF | CD-040CJBC | C2C31P1HCG040D |
| C407 | Chip | 3pF | 50WV | ±0.5pF | CD-030CJBC | C2C31P1HCG030D |
| C408 | Not used | | | | | |
| C409 | Chip | 8pF | 50WV | ±0.5pF | CD-080DJBC | C2C31P1HCG080D |
| C410 | Not used | | | | | |
| C411 | Chip | 3pF | 50WV | ±0.5pF | CD-030CJBC | C2C31P1HCG030D |
| C412 | Not used | | | | | |
| C413 | Chip | 1pF | 50WV | ±0.25pF | CD-010CJBC | C2C31P1HCG010C |
| C414 | Chip | 1pF | 50WV | ±0.25pF | CD-010CJBC | C2C31P1HCG010C |
| C415 | Not used | | | | | |
| C416 | Chip | 3pF | 50WV | ±0.5pF | CD-030CJBC | C2C31P1HCG030D |
| C417 | Not used | | | | | |
| C418 | Chip | 4pF | 50WV | ±0.5pF | CD-040CJBC | C2C31P1HCG040D |
| C419 | Chip | 4pF | 50WV | ±0.5pF | CD-040CJBC | C2C31P1HCG040D |
| C420 | Ceramic | 5pF | 50WV | ±0.5pF | CC-050CJBC | HE40SJSL050D |
| C421 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C501 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C502 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C503 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C504 | Ceramic | 100pF | 50WV | ±10% | CC-101KJBC | HE40SJYB101K |
| C505 | Ceramic | 100pF | 50WV | ±10% | CC-101KJBC | HE40SJYB101K |
| C506 | Ceramic | 100pF | 50WV | ±10% | CC-101KJBC | HE40SJYB101K |
| C507 | Ceramic | 100pF | 50WV | ±10% | CC-101KJBC | HE40SJYB101K |
| C508 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C509 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C510 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C511 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C512 | Electrolytic | 4.7μF | 25WV | ±20% | CC-475MFBA | 25MV4R7HA |
| C513 | Not used | | | | | |
| C514 | Not used | | | | | |
| C515 | Ceramic | 0.001μF | 50WV | ±10% | CC-102KJBC | HE50SJYB102K |
| C516 | Electrolytic | 10μF | 16WV | ±20% | CC-106MDCA | 16MV100HA |
| C517 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C518 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C519 | Ceramic | 100pF | 50WV | ±10% | CC-101KJBC | HE40SJYB101K |
| C701 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C702 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C703 | Ceramic | 0.01μF | 50WV | +80%–20% | CC-103ZJBC | HE70SJYF103Z |
| C704 | Electrolytic | 100μF | 16WV | ±20% | CC-107MDCA | 16MV101SS |
| C705 | Mylar | 0.047μF | 50WV | ±10% | CC-473KJBM | AK1-UU473K50 |
| C706 | Tantalum | 6.8μF | 10WV | ±20% | CC-685MCBT | DN1A6R8M1S |

## CAPACITOR ARRAY

| Ref. No. | Description | RS Part Number | MFR's Part Number |
|---|---|---|---|
| CA501 | 0.001μFx8 50WV +80%–20% | | EXF-P8102ZF |
| CA502 | 100pFx6 50WV ±20% | C-1814 | EXF-P6101MF |
| CA503 | 100pFx12 50WV ±20% | C-1815 | EXF-P12101MF |
| CA504 | 100pFx12 50WV ±20% | C-1815 | EXF-P12101MF |
| CB1 | 0.01μFx2 250V +80%–20% | CA-1816 | EXR-FS203ZS |
| CB2 | 0.01μFx2 250V +80%–20% | CA-1816 | EXR-FS203ZS |

## DIODE

| Ref. No. | Description | RS Part Number | MFR's Part Number |
|---|---|---|---|
| D1 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D2 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D3 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D4 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D5 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D6 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D7 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D8 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D9 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D10 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D11 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D12 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D13 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D14 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D15 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D16 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D17 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D18 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D19 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D20 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D21 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D22 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D23 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D24 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D25 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D26 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D27 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D28 | ND487C1-3R (Silicon) | DX-2773 | ND487C1-3R |
| D29 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D30 | 1SS241 (Silicon) | DX-2771 | 1SS241 |
| D31 | OA90-R (Germanium) | DX-2772 | OA90-R |
| D32 | OA90-R (Germanium) | DX-2772 | OA90-R |
| D33 | OA90-R (Germanium) | DX-2772 | OA90-R |
| D34 | 1S2076A (Silicon) | DX-1056 | 1S2076A |
| D35 | 1S2076A (Silicon) | DX-1056 | 1S2076A |
| D36 | 1S2076A (Silicon) | DX-1056 | 1S2076A |

| Ref. No. | Description | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|
| D37 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D38 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D39 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D40 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D41 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D42 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D43 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D44 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D45 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D46 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D47 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D48 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D49 | Zener | HZ6B2L | (Silicon) | DX-2774 | HZ6B2L |
| D50 | Zener | HZ9B2L | (Silicon) | DX-2009 | HZ9B2L |
| D51 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D52 | Zener | HZ11B2L | (Silicon) | DX-2687 | HZ11B2L |
| D53 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D54 | | SR1K-2 | (Silicon) | DX-0475 | SR1K-2 |
| ⚠D55 | Rectifier | 1B4B41 | (Silicon) | DX-2513 | 1B4B41 |
| D56 | | 1S1585 | (Silicon) | DX-0636 | 1S1585 |
| D57 | | 1S1585 | (Silicon) | DX-0636 | 1S1585 |
| D301 | | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D302 | | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D303 | | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D304 | | 1SS241 | (Silicon) | DX-2771 | 1SS241 |
| D305 | Varactor | 1T25(5/6/7) | (Silicon) | DX-2775 | 1T25(5/6/7) |
| D306 | Varactor | 1T25(5/6/7) | (Silicon) | DX-2775 | 1T25(5/6/7) |
| D307 | Varactor | 1T25(5/6/7) | (Silicon) | DX-2775 | 1T25(5/6/7) |
| D308 | Varactor | 1T25(5/6/7) | (Silicon) | DX-2775 | 1T25(5/6/7) |
| D309 | Varactor | 1SV89 | (Silicon) | DX-0139 | 1SV89 |
| D501 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D502 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D503 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D504 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D505 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D506 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D507 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D508 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D509 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D510 | Not used | | | | |
| D511 | Not used | | | | |
| D512† | Not used | | | | |
| D513 | Not used | | | | |
| D514 | Not used | | | | |
| D515 | | 1S2076A | (Silicon) | DX-1056 | 1S2076A |
| D701 | LED | TLR-208 | | L-0066 | TLR-208 |

† See Appendix (page 54) for ITI models.

## INTEGRATED CIRCUITS

| Ref. No. | Description | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|
| IC1 | KB4419A | (IF Amp/Det) | (Bipolar) Linear | MX-7474 | KB4419A |
| IC2 | TK10420 | (IF Amp/Quad/Det) | (Bipolar) Linear | MX-4012 | TK10420 |
| IC3 | HD14011BP | (Switching) | (C-MOS) Logic | MX-5444 | HD14011B |
| IC4 | HD14066BP | (Switching/Mute) | (C-MOS) | MX-5805 | HD14066BP |
| IC5 | μPC324C | (Amp) | (Bipolar) | MX-4373 | μPC324C |
| IC6 | μPC324C | (Zeromatic Cont) | (Bipolar) | MX-4373 | μPC324C |
| IC7 | TDA1905 | (Audio Amp) | (Bipolar) | MX-6439 | TDA1905 |
| IC8 | HA17805P/ TA78005AP | (Voltage Regulator) | (Bipolar) | MX-4760 | HA17805P/ TA78005AP |
| IC9 | S-81250HG | (Voltage Regulator) | (C-MOS) | MX-7475 | S-81250HG |
| IC301 | MC145158 | (PLL) | (C-MOS) | MX-4014 | MC145158 |
| IC302 | CX7925B | (PLL/Pre-Scaler) | (N-MOS) | MX-6967 | CX7925B |
| IC303 | TD6127AP | (Pre-Scaler) | (Bipolar) | MX-7476 | TD6127AP |
| IC304 | TD6105AP | (Pre-Scaler) | (Bipolar) | MX-7477 | TD6105AP |
| IC305 | TA78L005AP | (Voltage Regulator) | (Bipolar) | MX-6487 | TA78L005AP |
| IC306 | TA78L005AP | (Voltage Regulator) | (Bipolar) | MX-6487 | TA78L005AP |
| IC501 | SN74LS145/ HD74LS145 | (Decoder) | (Bipolar) | MX-7479 | SN74LS145/ HD74LS145 |
| IC502 | TD62504P | (Driver) | (Bipolar) | MX-5593 | TD62504P |
| IC503 | GRE0327 | (CPU) | (C-MOS) | MX-7478 | GRE0327 |
| IC504 | μPD446G-45/ TC5517CF-20 | (Memory Back Up) | (C-MOS) | MX-7480 | μPD446G-45/ TC5527CF-20 |
| IC701 | μPD7225G-00 | (LCD Controller) | (C-MOS) | MX-7481 | μPD7225G-00 |

## COILS & TRANSFORMERS

| Ref. No. | Description | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|
| L1 | Coil, Trap | (609.5MHz) | CA-1216 | GR-H761 |
| L2 | Not used | | | |
| L3 | Coil, B.P.F | (280MHz to 520MHz) | CA-1219 | 2LNB-253 |
| L4 | Coil, B.P.F | (280MHz to 520MHz) | CA-1219 | 2LNB-253 |
| L5 | Coil, B.P.F | (280MHz to 520MHz) | CA-1219 | 2LNB-253 |
| L6 | Coil, B.P.F | (280MHz to 520MHz) | CA-1219 | 2LNB-253 |
| L7 | Coil, B.P.F | (280MHz to 520MHz) | CA-1219 | 2LNB-253 |
| L8 | Coil, B.P.F | (280MHz to 520MHz) | CA-1219 | 2LNB-253 |
| L9 | Coil, B.P.F | (280MHz to 520MHz) | CA-1219 | 2LNB-253 |
| L10 | Coil, B.P.F | (280MHz to 520MHz) | CA-1219 | 2LNB-253 |
| L11 | Not used | | | |
| L12 | Coil, B.P.F | (174MHz to 279.995MHz) | CA-1220 | 2LNB-252 |
| L13 | Coil, B.P.F | (174MHz to 279.995MHz) | CA-1220 | 2LNB-252 |
| L14 | Coil, B.P.F | (174MHz to 279.995MHz) | CA-1220 | 2LNB-252 |
| L15 | Coil, B.P.F | (174MHz to 279.995MHz) | CA-1220 | 2LNB-252 |
| L16 | Coil, B.P.F | (174MHz to 279.995MHz) | CA-1220 | 2LNB-252 |
| L17 | Coil, B.P.F | (174MHz to 279.995MHz) | CA-1220 | 2LNB-252 |
| L18 | Coil, B.P.F | (174MHz to 279.995MHz) | CA-1220 | 2LNB-252 |
| L19 | Coil, B.P.F | (174MHz to 279.995MHz) | CA-1220 | 2LNB-252 |
| L20 | Not used | | | |
| L21 | Coil, B.P.F | (108MHz to 173.995MHz) | CA-1221 | 3LNB-251 |
| L22 | Coil, B.P.F | (108MHz to 173.995MHz) | CA-1221 | 3LNB-251 |

| Ref. No. | Description | RS Part Number | MFR's Part Number |
|---|---|---|---|
| L23 | Coil, B.P.F (108MHz to 173.995MHz) | CA-1221 | 3LNB-251 |
| L24 | Coil, B.P.F (108MHz to 173.995MHz) | CA-1221 | 3LNB-251 |
| L25 | Coil, B.P.F (108MHz to 173.995MHz) | CA-1221 | 3LNB-251 |
| L26 | Coil, B.P.F (108MHz to 173.995MHz) | CA-1221 | 3LNB-251 |
| L27 | Coil, B.P.F (108MHz to 173.995MHz) | CA-1221 | 3LNB-251 |
| L28 | Coil, B.P.F (108MHz to 173.995MHz) | CA-1221 | 3LNB-251 |
| L29 | Not used | | |
| L30 | Coil, B.P.F (68MHz to 107.995MHz) | CA-1222 | 4LNB-250 |
| L31 | Coil, B.P.F (68MHz to 107.995MHz) | CA-1222 | 4LNB-250 |
| L32 | Coil, B.P.F (68MHz to 107.995MHz) | CA-1222 | 4LNB-250 |
| L33 | Coil, B.P.F (68MHz to 107.995MHz) | CA-1222 | 4LNB-250 |
| L34 | Coil, B.P.F (68MHz to 107.995MHz) | CA-1222 | 4LNB-250 |
| L35 | Coil, B.P.F (68MHz to 107.995MHz) | CA-1222 | 4LNB-250 |
| L36 | Coil, B.P.F (68MHz to 107.995MHz) | CA-1222 | 4LNB-250 |
| L37 | Coil, B.P.F (68MHz to 107.995MHz) | CA-1222 | 4LNB-250 |
| L38 | Not used | | |
| L39 | Coil, B.P.F (40MHz to 67.995MHz) | CA-1223 | 4LNB-249 |
| L40 | Coil, B.P.F (40MHz to 67.995MHz) | CA-1223 | 4LNB-249 |
| L41 | Coil, B.P.F (40MHz to 67.995MHz) | CA-1223 | 4LNB-249 |
| L42 | Coil, B.P.F (40MHz to 67.995MHz) | CA-1223 | 4LNB-249 |
| L43 | Coil, B.P.F (40MHz to 67.995MHz) | CA-1223 | 4LNB-249 |
| L44 | Coil, B.P.F (40MHz to 67.995MHz) | CA-1223 | 4LNB-249 |
| L45 | Coil, B.P.F (40MHz to 67.995MHz) | CA-1223 | 4LNB-249 |
| L46 | Coil, Choke 10μH | CA-9828 | LAL03NA100K |
| L47 | Not used | | |
| L48 | Coil, B.P.F (25MHz to 39.995MHz) | CA-8513 | LAL03NAR33M |
| L49 | Coil, B.P.F (25MHz to 39.995MHz) | CA-8513 | LAL03NAR33M |
| L50 | Coil, B.P.F (25MHz to 39.995MHz) | CA-8513 | LAL03NAR33M |
| L51 | Coil, B.P.F (25MHz to 39.995MHz) | CA-8513 | LAL03NAR33M |
| L52 | Coil, B.P.F (25MHz to 39.995MHz) | CA-8513 | LAL03NAR33M |
| L53 | Coil, B.P.F (25MHz to 39.995MHz) | CA-8513 | LAL03NAR33M |
| L54 | Not used | | |
| L55 | Coil, Trap (609.5MHz) | CA-1216 | GR-H761 |
| L56 | Coil, D.B.M | CA-1224 | 2LNM-258 |
| L57 | Coil, D.B.M | CA-1224 | 2LNM-258 |
| L58 | Coil, Choke | SB-2119 | 2LN0-256 |
| L59 | Coil, 1st IF | CA-1217 | GR-H763 |
| L60 | Coil, Trap (397.5MHz) | CA-1218 | GR-H762 |
| L61 | Coil, Choke 0.68μH | CB-2116 | LAL03NAR68M |
| L62 | Coil, Choke 2.2mH | CB-2118 | FL5HS222J-09 |
| L63 | Coil, Choke 1μH | CB-2117 | LAL03NA1R0M |
| L64 | Coil, Choke 100μH | CB-2070 | LAL03NA101K |
| L65 | Coil, Choke | CA-3182 | 3B037 |
| L66 | Stripline on P.C.B | | |
| L67 | Stripline on P.C.B | | |
| L68 | Stripline on P.C.B | | |
| L69 | Stripline on P.C.B | | |
| L70 | Stripline on P.C.B | | |
| L71 | Coil, Choke 1μH | CB-2117 | LAL03NA1R0M |
| L301 | Coil, Choke 10μH | CA-9828 | LAL03NA100K |
| L302 | Coil, Choke 10μH | CA-9828 | LAL03NA100K |
| L303 | Coil, Choke 10μH | CA-9828 | LAL03NA100K |
| L304 | Low-pass Filter | CA-1215 | 2.5LBN-257 |
| L305 | Low-pass Filter | CA-1215 | 2.5LNB-257 |
| L306 | Coil, Choke 10μH | CA-9828 | LAL03NA100K |
| L307 | Coil, Choke 10μH | CA-9828 | LAL03NA100K |

| Ref. No. | Description | RS Part Number | MFR's Part Number |
|---|---|---|---|
| L308 | Coil, Choke 0.33μH | CB-2120 | FL3HR33K |
| L309 | Coil, Choke | CB-2122 | 2LNO-254 |
| L310 | Coil, Choke 0.33μH | CB-2120 | FL3HR33K |
| L311 | Coil, Choke | CB-2123 | 2LNO-255 |
| L312 | Coil, Choke | CB-2124 | 2LNO-253 |
| L313 | Coil, Choke 100μH | CB-2070 | LAL03NA101K |
| L314 | Coil, Choke 100μH | CB-2070 | LAL03NA101K |
| L315 | Coil, Choke 100μH | CB-2070 | LAL03NA101K |
| L316 | Coil, Choke 100μH | CB-2070 | LAL03NA101K |
| L317 | Coil, Choke | CB-2124 | 2LNO-253 |
| L318 | Coil, Choke 10μH | CB-2071 | FL3H100K |
| L319 | Coil, Choke 100μH | CB-2070 | LAL03NA101K |
| L320 | Coil, Choke 100μH | CB-2070 | LAL04NA101K |
| L321 | Coil, Choke 1μH | CB-2117 | LAL03NA1R0M |
| L322 | Coil, Choke 1μH | CB-2117 | LAL03NA1R0M |
| L323 | Low-pass Filter, Stripline on P.C.B | | |
| L324 | Low-pass Filter, Stripline on P.C.B | | |
| L325 | Low-pass Filter, Stripline on P.C.B | | |
| L326 | Low-pass Filter, Stripline on P.C.B | | |
| L327 | High-pass Filter, Stripline on P.C.B | | |
| L328 | High-pass Filter, Stripline on P.C.B | | |
| L329 | High-pass Filter, Stripline on P.C.B | | |
| L330 | High-pass Filter, Stripline on P.C.B | | |
| L501 | Coil, Choke 100μH | | LAL03KH101K |
| L502 | Coil, Choke 100μH | | LAL03KH101K |
| L503 | Coil, Choke 100μH | | LAL03KH101K |
| T1 | Coil, 2nd IF | CA-1211 | GR-N769 |
| T2 | Coil, 2nd IF (WFM Band) | CA-1212 | GR-N764 |
| T3 | Coil, 2nd IF | CA-1212 | GR-N764 |
| T4 | Coil, 3rd IF | CA-7246 | GR-A470033 |
| T5 | Coil, 3rd IF | CA-7246 | GR-A470033 |
| T6 | Coil, Quadrature DET. (WFM Band), 10.7MHz | CA-1213 | GR-A793 |
| T7 | Coil, 3rd IF (AM Band) | CA-9882 | GR-D681 |
| T8 | Coil, 3rd IF (AM Band) | CA-9883 | GR-D682 |
| T9 | Coil, 2nd IF (AM, NFM Band) | | GR-N797 |
| T10 | Coil, Filter | | GR-N797 |
| T11 | Coil, 2nd IF (AM, NFM Band) | | GR-N797 |
| T12 | Coil, 2nd IF (AM, NFM Band) | CA-1212 | GR-N764 |
| T13 | Coil, Quadrature DET. (NFM Band) | CA-1214 | GR-P792 |
| T14 | DC-DC Converter, Transformer | CA-1215 | GE-84D-5242 |
| T701 | DC-AC Converter, Transformer | TB-0126 | N19-5N75TK |
| ⚠T801† | Transformer, Power | TA-0127 | GE-85D-5667 |

† See Appendix (page 54) for ITI models.

**TRANSISTORS**

| Ref. No. | Description | RS Part Number | MFR's Part Number |
|---|---|---|---|
| Q1 | 2SC2458(GR) (NPN) AGC. Cont. | 2SC2458GR | 2SC2458(GR) |
| Q2 | 2SC3356 (NPN) | 2SC-3356 | 2SC3356 |
| Q3 | 2SC3356 (NPN) | 2SC-3356 | 2SC3356 |
| Q4 | 2SC3356 (NPN) | 2SC-3356 | 2SC3356 |
| Q5 | 2SC3355 (NPN) | 2SC-3355 | 2SC3355 |
| Q6 | 2SC3355 (NPN) | 2SC-3355 | 2SC3355 |
| Q7 | Not used | | |
| Q8 | 2SC2458(GR) (NPN) | 2SC2458GR | 2SC2458(GR) |

| Ref. No. | Description | RS Part Number | MFR's Part Number |
|---|---|---|---|
| Q9 | 2SC2458(GR) (NPN) | 2SC2458GR | 2SC2458(GR) |
| Q10 | 2SC2458(GR) (NPN) | 2SC2458GR | 2SC2458(GR) |
| Q11 | 2SC2668(Y) (NPN) | 2SC-2268 | 2SC2668(Y) |
| Q12 | 2SC2668(Y) (NPN) | 2SC-2268 | 2SC2668(Y) |
| Q13 | FET 2SK192A(GR) | 2SK-192AGR | 2SK192A(GR) |
| Q14 | 2SC2458(Y) (NPN) | 2SC-2458Y | 2SC2458(Y) |
| Q15 | 2SC2458(GR) (NPN) | 2SC-2458GR | 2SC2458(GR) |
| Q16 | 2SC2458(Y) (NPN) | 2SC-2458Y | 2SC2458(Y) |
| Q17 | 2SC2458(Y) (NPN) | 2SC-2458Y | 2SC2458(Y) |
| Q18 | 2SC2668(Y) (NPN) | 2SC-2668 | 2SC2668(Y) |
| Q19 | 2SC2668(Y) (NPN) | 2SC-2668 | 2SC2668(Y) |
| Q20 | 2SA1048 (PNP) | 2SA-1048 | 2SA1048 |
| Q21 | 2SC2458(GR) (NPN) | 2SC-2458GR | 2SC2458(GR) |
| Q22 | 2SC2458L(GR) (NPN) | 2SC-2458L | 2SC2458L(GR) |
| Q23 | 2SC2458(GR) (NPN) | 2SC-2458GR | 2SC2458(GR) |
| Q24 | 2SC3327/2SD1330S (NPN) | 2SC-3327 | 2SC3327/2SD1330S |
| Q25 | 2SC2458(GR) (NPN) | 2SC-2458GR | 2SC2458(GR) |
| Q26 | 2SC2458L(GR) (NPN) | 2SC-2458L | 2SC2458L(GR) |
| Q27 | RN2005 (PNP) w/Resistor | 1TR-0104 | RN2005 |
| Q28 | RN2005 (PNP) w/Resistor | 1TR-0104 | RN2005 |
| Q29 | RN2005 (PNP) w/Resistor | 1TR-0104 | RN2005 |
| Q30 | 2SC2458(GR) (NPN) | 2SC-2458GR | 2SC2458(GR) |
| Q31 | 2SC2458(GR) (NPN) | 2SC-2458GR | 2SC2458(GR) |
| Q32 | 2SD1406(GR) (NPN) | 2SD-1406GR | 2SD1406(GR) |
| Q33 | 2SC1815(GR) (NPN) | 2SC-1815GR | 2SC1815(GR) |
| Q34 | 2SC2458(GR) (NPN) | 2SC-2458GR | 2SC2458(GR) |
| Q301 | RN2005 (PNP) w/Resistor | 1TR-0104 | RN2005 |
| Q302 | RN2005 (PNP) w/Resistor | 1TR-0104 | RN2005 |
| Q303 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q304 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q305 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q306 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q307 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q308 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q309 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q310 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q311 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q312 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q313 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q314 | 2SC3358 (NPN) | 2SC-3358 | 2SC3358 |
| Q315 | RN2005 (PNP) w/Resistor | 1TR-0104 | RN2005 |
| Q316 | RN2005 (PNP) w/Resistor | 1TR-0104 | RN2005 |
| Q317 | Not used | | |
| Q318 | FET 2SK184(GR) | 2SK-184GR | 2SK184(GR) |
| Q319 | 2SC2458L(GR) (NPN) | 2SC-2458L | 2SC2458L(GR) |
| Q501 | RN2201 (PNP) w/Resistor | | RN2201 |
| Q502 | RN2201 (PNP) w/Resistor | | RN2201 |
| Q503 | RN2201 (PNP) w/Resistor | | RN2201 |
| Q504 | RN2201 (PNP) w/Resistor | | RN2201 |
| Q505 | RN2201 (PNP) w/Resistor | | RN2201 |
| Q506 | RN2201 (PNP) w/Resistor | | RN2201 |
| Q507 | RN2201 (PNP) w/Resistor | | RN2201 |
| Q701 | 2SC945(QA) (NPN) | | 2SC945(QA) |

## RESISTORS

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| R1 | Not used | | | | | |
| R2 | Chip | 100 ohm | 1/8W | ±5% | ND-0132EBN | ERJ-8GCYJ101 |
| R3 | Chip | 82 ohm | 1/8W | ±5% | ND-0122EBN | ERJ-8GCYJ820 |
| R4 | Chip | 100 ohm | 1/8W | ±5% | ND-0132EBN | ERJ-8GCYJ101 |
| R5 | Chip | 100k ohm | 1/8W | ±5% | ND-0371EBN | ERJ-8GCYJ104 |
| R6 | Chip | 10k ohm | 1/8W | ±5% | ND-0281EBN | ERJ-8GCYJ103 |
| R7 | Chip | 3.3k ohm | 1/8W | ±5% | ND-0230EBN | ERJ-8GCYJ332 |
| R8 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R9 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R10 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R11 | Chip | 47k ohm | 1/8W | ±5% | ND-0340EBN | ERJ-8GCYJ473 |
| R12 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R13 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R14 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R15 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R16 | Chip | 100k ohm | 1/8W | ±5% | ND-0371EBN | ERJ-8GCYJ104 |
| R17 | Chip | 3.3k ohm | 1/8W | ±5% | ND-0230EBN | ERJ-8GCYJ332 |
| R18 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R19 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R20 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R21 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R22 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R23 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R24 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R25 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R26 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R27 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R28 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R29 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R30 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R31 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R32 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R33 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R34 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R35 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R36 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R37 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R38 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R39 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R40 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R41 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R42 | Chip | 470k ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ474 |
| R43 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R44 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R45 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R46 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R47 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R48 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R49 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R50 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R51 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R52 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R53 | Chip | 270 ohm | 1/8W | ±5% | ND-0155EBN | ERJ-8GCYJ271 |
| R54 | Chip | 2.2k ohm | 1/8W | ±5% | ND-0216EBN | ERJ-8GCYJ222 |
| R55 | Chip | 470 ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ471 |

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| R56 | Chip | 22 ohm | 1/8W | ±5% | ND-0078EBN | ERJ-8GCYJ220 |
| R57 | Chip | 820 ohm | 1/8W | ±5% | ND-0187EBN | ERJ-8GCYJ821 |
| R58 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R59 | Chip | 680 ohm | 1/8W | ±5% | ND-0183EBN | ERJ-8GCYJ681 |
| R60 | Chip | 330 ohm | 1/8W | ±5% | ND-0159EBN | ERJ-8GCYJ331 |
| R61 | Chip | 56 ohm | 1/8W | ±5% | ND-0107EBN | ERJ-8GCYJ560 |
| R62 | Chip | 680 ohm | 1/8W | ±5% | ND-0183EBN | ERJ-8GCYJ681 |
| R63 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R64 | Chip | 470 ohm | 1/8W | ±5% | ND-0169EBN | ERJ-8GCYJ471 |
| R65 | Chip | 100 ohm | 1/8W | ±5% | ND-0132EBN | ERJ-8GCYJ101 |
| R66 | Chip | 47 ohm | 1/8W | ±5% | ND-0099EBN | ERJ-8GCYJ470 |
| R67 | Chip | 56 ohm | 1/8W | ±5% | ND-0107EBN | ERJ-8GCYJ560 |
| R68 | Chip | 1.5k ohm | 1/8W | ±5% | ND-0206EBN | ERJ-8GCYJ152 |
| R69 | Chip | 2.2k ohm | 1/8W | ±5% | ND-0216EBN | ERJ-8GCYJ222 |
| R70 | Chip | 330 ohm | 1/8W | ±5% | ND-0159EBN | ERJ-8GCYJ331 |
| R71 | Chip | 100 ohm | 1/8W | ±5% | ND-0132EBN | ERJ-8GCYJ101 |
| R72 | Chip | 56 ohm | 1/8W | ±5% | ND-0107EBN | ERJ-8GCYJ560 |
| R73 | Chip | 47k ohm | 1/8W | ±5% | ND-0340EBN | ERJ-8GCYJ473 |
| R74 | Chip | 220k ohm | 1/8W | ±5% | ND-0396EBN | ERJ-8GCYJ224 |
| R75 | Chip | 56 ohm | 1/8W | ±5% | ND-0107EBN | ERJ-8GCYJ560 |
| R76 | Chip | 330 ohm | 1/8W | ±5% | ND-0159EBN | ERJ-8GCYJ331 |
| R77 | Chip | 47 ohm | 1/8W | ±5% | ND-0099EBN | ERJ-8GCYJ470 |
| R78 | Chip | 220 ohm | 1/8W | ±5% | ND-0149EBN | ERJ-8GCYJ221 |
| R79 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R80 | Chip | 56 ohm | 1/8W | ±5% | ND-0107EBN | ERJ-8GCYJ560 |
| R81 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R82 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R83 | Carbon film | 120k ohm | 1/6W | ±5% | N-0375ECC | RD16U124J |
| R84 | Carbon film | 15k ohm | 1/6W | ±5% | N-0297ECC | RD16U153J |
| R85 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R86 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R87 | Carbon film | 27k ohm | 1/6W | ±5% | N-0316ECC | RD16U273J |
| R88 | Carbon film | 56k ohm | 1/6W | ±5% | N-0345ECC | RD16U563J |
| R89 | Carbon film | 5.6k ohm | 1/6W | ±5% | N-0257ECC | RD16U562J |
| R90 | Carbon film | 2.2k ohm | 1/6W | ±5% | N-0216ECC | RD16U222J |
| R91 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R92 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R93 | Carbon film | 220k ohm | 1/6W | ±5% | N-0396ECC | RD16U224J |
| R94 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R95 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R96 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R97 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16U221J |
| R98 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R99 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R100 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R101 | Carbon film | 6.8k ohm | 1/6W | ±5% | N-0262ECC | RD16U682J |
| R102 | Carbon film | 2.2k ohm | 1/6W | ±5% | N-0216ECC | RD16U222J |
| R103 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R104 | Carbon film | 220k ohm | 1/6W | ±5% | N-0396ECC | RD16U224J |
| R105 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16S221J |
| R106 | Carbon film | 10 ohm | 1/6W | ±5% | N-0063ECC | RD16U100J |
| R107 | Carbon film | 330 ohm | 1/6W | ±5% | N-0159ECC | RD16U331J |
| R108 | Carbon film | 120 ohm | 1/6W | ±5% | N-0136ECC | RD16U121J |
| R109 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R110 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R111 | Not used | | | | | |
| R112 | Carbon film | 1M ohm | 1/6W | ±5% | N-0445ECC | RD16U105J |

| Ref. No. | Descriptoin | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| R113 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R114 | Carbon film | 22k ohm | 1/6W | ±5% | N-0311ECC | RD16U223J |
| R115 | Carbon film | 470 ohm | 1/6W | ±5% | N-0169ECC | RD16U471J |
| R116 | Carbon film | 270k ohm | 1/6W | ±5% | N-0402ECC | RD16U274J |
| R117 | Carbon film | 15k ohm | 1/6W | ±5% | N-0297ECC | RD16S153J |
| R118 | Carbon film | 470 ohm | 1/6W | ±5% | N-0169ECC | RD16U471J |
| R119 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R120 | Carbon film | 180k ohm | 1/6W | ±5% | N-0387ECC | RD16U184J |
| R121 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R122 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R123 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R124 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R125 | Carbon film | 220k ohm | 1/6W | ±5% | N-0396ECC | RD16U224J |
| R126 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R127 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R128 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R129 | Carbon film | 2.2k ohm | 1/6W | ±5% | N-0216ECC | RD16U222J |
| R130 | Carbon film | 390k ohm | 1/6W | ±5% | N-0414ECC | RD16S394J |
| R131 | Carbon film | 3.3k ohm | 1/6W | ±5% | N-0230ECC | RD16S332J |
| R132 | Carbon film | 470 ohm | 1/6W | ±5% | N-0169ECC | RD16U471J |
| R133 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R134 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R135 | Carbon film | 390k ohm | 1/6W | ±5% | N-0414ECC | RD16S394J |
| R136 | Carbon film | 5.6k ohm | 1/6W | ±5% | N-0257ECC | RD16S562J |
| R137 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R138 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R139 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16S101J |
| R140 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16S333J |
| R141 | Carbon film | 1.5k ohm | 1/6W | ±5% | N-0206ECC | RD16U152J |
| R142 | Carbon film | 3.3k ohm | 1/6W | ±5% | N-0230ECC | RD16U332J |
| R143 | Carbon film | 1.5k ohm | 1/6W | ±5% | N-0206ECC | RD16U152J |
| R144 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R145 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R146 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R147 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R148 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R149 | Carbon film | 2.2k ohm | 1/6W | ±5% | N-0216ECC | RD16U222J |
| R150 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R151 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R152 | Carbon film | 1M ohm | 1/6W | ±5% | N-0445ECC | RD16U105J |
| R153 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R154 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R155 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R156 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R157 | Carbon film | 8.2k ohm | 1/6W | ±5% | N-0271ECC | RD16U822J |
| R158 | Carbon film | 1.5k ohm | 1/6W | ±5% | N-0206ECC | RD16U152J |
| R159 | Carbon film | 2.7k ohm | 1/6W | ±5% | N-0224ECC | RD16U272J |
| R160 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R161 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R162 | Carbon film | 3.3k ohm | 1/6W | ±5% | N-0230ECC | RD16U332J |
| R163 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R164 | Carbon film | 2.7k ohm | 1/6W | ±5% | N-0224ECC | RD16U272J |
| R165 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R166 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R167 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R168 | Carbon film | 5.6k ohm | 1/6W | ±5% | N-0257ECC | RD16U562J |
| R169 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| R170 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R171 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R172 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R173 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R174 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R175 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R176 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R177 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R178 | Carbon film | 1M ohm | 1/6W | ±5% | N-0445ECC | RD16U105J |
| R179 | Carbon film | 1.5k ohm | 1/6W | ±5% | N-0206ECC | RD16U152J |
| R180 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R181 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R182 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R183 | Carbon film | 220k ohm | 1/6W | ±5% | N-0396ECC | RD16U224J |
| R184 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R185 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R186 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R187 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R188 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R189 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R190 | Carbon film | 15k ohm | 1/6W | ±5% | N-0297ECC | RD16U153J |
| R191 | Carbon film | 68k ohm | 1/6W | ±5% | N-0354ECC | RD16U683J |
| R192 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R193 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R194 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R195 | Carbon film | 22k ohm | 1/6W | ±5% | N-0311ECC | RD16U223J |
| R196 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R197 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R198 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R199 | Carbon film | 82k ohm | 1/6W | ±5% | N-0360ECC | RD16U823J |
| R200 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R201 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R202 | Carbon film | 22k ohm | 1/6W | ±5% | N-0311ECC | RD16U223J |
| R203 | Carbon film | 22k ohm | 1/6W | ±5% | N-0311ECC | RD16U223J |
| R204 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R205 | Carbon film | 22k ohm | 1/6W | ±5% | N-0311ECC | RD16U223J |
| R206 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R207 | Carbon film | 1M ohm | 1/6W | ±5% | N-0445ECC | RD16U105J |
| R208 | Carbon film | 2.7k ohm | 1/6W | ±5% | N-0224ECC | RD16U272J |
| R209 | Carbon film | 470 ohm | 1/6W | ±5% | N-0169ECC | RD16U471J |
| R210 | Carbon film | 22k ohm | 1/6W | ±5% | N-0311ECC | RD16U223J |
| R211 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R212 | Carbon film | 1M ohm | 1/6W | ±5% | N-0445ECC | RD16U105J |
| R213 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R214† | Metal film | 3.3 ohm | 1W | ±5% | N-0037EGE | RNS1.0-3R3J |
| R215 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16S103J |
| R216 | Carbon film | 47 ohm | 1/6W | ±5% | N-0099ECC | RD16S470J |
| R217 | Carbon film | 1 ohm | 1/6W | ±5% | N-0022ECC | RD16U010J |
| R218 | Carbon film | 270 ohm | 1/6W | ±5% | N-0155ECC | RD16U271J |
| R219 | Carbon film | 56k ohm | 1/6W | ±5% | N-0345ECC | RD16U563J |
| R220 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R221 | Carbon film | 470k ohm | 1/6W | ±5% | N-0423ECC | RD16U474J |
| R222 | Carbon film | 180k ohm | 1/6W | ±5% | N-0387ECC | RD16U184J |
| R223 | Carbon film | 2.2M ohm | 1/6W | ±5% | N-0454ECC | RD16U225J |
| R224 | Carbon film | 2.2M ohm | 1/6W | ±5% | N-0454ECC | RD16U225J |
| R225 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R226 | Carbon film | 330 ohm | 1/6W | ±5% | N-0159ECC | RD16U331J |

† See Appendix (page 54) for ITI models.

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| R227 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16U221J |
| R228 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R229 | Carbon film | 15k ohm | 1/6W | ±5% | N-0297ECC | RD16U153J |
| R230 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16S333J |
| R231 | Carbon film | 220k ohm | 1/6W | ±5% | N-0396ECC | RD16U224J |
| R232 | Carbon film | 15k ohm | 1/6W | ±5% | N-0297ECC | RD16U153J |
| R233 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R234 | Carbon film | 5.6k ohm | 1/6W | ±5% | N-0257ECC | RD16U562J |
| R235† | Metal film | 1 ohm | 1W | ±5% | N-0022EGE | RNS1.0-010J |
| R236 | Chip | 3.3k ohm | 1/8W | ±5% | ND-0230EBN | ERJ-8GCYJ332 |
| R237 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R238 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R239 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R240 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R241 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R242 | Chip | 10k ohm | 1/8W | ±5% | ND-0281EBN | ERJ-8GCYJ103 |
| R243 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R244 | Carbon film | 220k ohm | 1/6W | ±5% | N-0396ECC | RD16U224J |
| R245 | Carbon film | 180k ohm | 1/6W | ±5% | N-0387ECC | RD16U184J |
| R246 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R247 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R248 | Carbon film | 220 ohm | 1/4W | ±5% | | ERD-25PJ221 |
| R249 | Carbon film | 220 ohm | 1/4W | ±5% | | ERD-25PJ221 |
| R250 | Carbon film | 220 ohm | 1/4W | ±5% | | ERD-25PJ221 |
| R251 | Carbon film | 220 ohm | 1/4W | ±5% | | ERD-25PJ221 |
| R252 | Carbon film | 220 ohm | 1/4W | ±5% | | ERD-25PJ221 |
| R253 | Carbon film | 220 ohm | 1/4W | ±5% | | ERD-25PJ221 |
| R254 | Carbon film | 220 ohm | 1/4W | ±5% | | ERD-25PJ221 |
| R255 | Chip | 100 ohm | 1/8W | ±5% | ND-0132EBN | ERJ-8GCYJ101 |
| R256 | Carbon film | 1 ohm | 1/2W | ±5% | N-0022EFE | RNF1/2S1R0J |
| R301 | Carbon film | 2.2k ohm | 1/6W | ±5% | N-0216ECC | RD16U222J |
| R302 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R303 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16U221J |
| R304 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R305 | Carbon film | 2.2k ohm | 1/6W | ±5% | N-0216ECC | RD16U222J |
| R306 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R307 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R308 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16U221J |
| R309 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R310 | Carbon film | 10 ohm | 1/6W | ±5% | N-0063ECC | RD16U100J |
| R311 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R312 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R313 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R314 | Carbon film | 10 ohm | 1/6W | ±5% | N-0063ECC | RD16U100J |
| R315 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R316 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R317 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R318 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16U221J |
| R319 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R320 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16U221J |
| R321 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R322 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R323 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R324 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R325 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16U221J |
| R326 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R327 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16U221J |

† See Appendix (page 54) for ITI models.

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| R328 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R329 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R330 | Carbon film | 470 ohm | 1/6W | ±5% | N-0169ECC | RD16U471J |
| R331 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16U221J |
| R332 | Chip | 2.2k ohm | 1/8W | ±5% | ND-0216EBN | ERJ-8GCYJ222 |
| R333 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R334 | Chip | 100k ohm | 1/8W | ±5% | ND-0371EBN | ERJ-8GCYJ104 |
| R335 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R336 | Carbon film | 220 ohm | 1/6W | ±5% | N-0149ECC | RD16U221J |
| R337 | Chip | 1k ohm | 1/8W | ±5% | ND-0196EBN | ERJ-8GCYJ102 |
| R338 | Carbon film | 470 ohm | 1/6W | ±5% | N-0169ECC | RD16U471J |
| R339 | Chip | 2.2k ohm | 1/8W | ±5% | ND-0216EBN | ERJ-8GCYJ222 |
| R340 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R341 | Chip | 100k ohm | 1/8W | ±5% | ND-0371EBN | ERJ-8 GCYJ104 |
| R342 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R343 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R344 | Not used | | | | | |
| R345 | Carbon film | 470 ohm | 1/6W | ±5% | N-0169ECC | RD16U471J |
| R346 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R347 | Carbon film | 8.2k ohm | 1/6W | ±5% | N-0271ECC | RD16U822J |
| R348 | Carbon film | 330 ohm | 1/6W | ±5% | N-0159ECC | RD16U331J |
| R349 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R350 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R351 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R352 | Chip | 15k ohm | 1/8W | ±5% | ND-0297EBN | ERJ-8GCYJ153 |
| R353 | Carbon film | 470 ohm | 1/6W | ±5% | N-0169ECC | RD16U471J |
| R354 | Chip | 4.7k ohm | 1/8W | ±5% | ND-0247EBN | ERJ-8GCYJ472 |
| R355 | Carbon film | 33k ohm | 1/6W | ±5% | N-0324ECC | RD16U333J |
| R356 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R357 | Carbon film | 2.2k ohm | 1/6W | ±5% | N-0216ECC | RD16U222J |
| R358 | Carbon film | 2.2k ohm | 1/6W | ±5% | N-0216ECC | RD16U222J |
| R359 | Not used | | | | | |
| R360 | Carbon film | 5.6k ohm | 1/6W | ±5% | N-0257ECC | RD16U562J |
| R361 | Not used | | | | | |
| R362 | Not used | | | | | |
| R363 | Not used | | | | | |
| R364 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R365 | Carbon film | 15k ohm | 1/6W | ±5% | N-0297ECC | RD16U153J |
| R366 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R367 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R368 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R369 | Carbon film | 2.2k ohm | 1/6W | ±5% | N-0216ECC | RD16U222J |
| R370 | Carbon film | 820 ohm | 1/6W | ±5% | | RD16U821J |
| R371 | Carbon film | 1k ohm | 1/6W | ±5% | N-0196ECC | RD16U102J |
| R501 | Carbon film | 100k ohm | 1/6W | ±5% | N-0371ECC | RD16U104J |
| R502 | Carbon film | 1M ohm | 1/6W | ±5% | N-0445ECC | RD16U105J |
| R503 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R504 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R505 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R506 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R507 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R508 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R509 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R510 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R511 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R512 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R513 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |

| Ref. No. | Description | | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|---|
| R514 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R515 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R516 | Carbon film | 560k ohm | 1/6W | ±5% | | RD16U564J |
| R517 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R518 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R519 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R520 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R521 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R522 | Carbon film | 47k ohm | 1/6W | ±5% | N-0340ECC | RD16U473J |
| R701 | Carbon film | 4.7k ohm | 1/6W | ±5% | N-0247ECC | RD16U472J |
| R702 | Carbon film | 100 ohm | 1/6W | ±5% | N-0132ECC | RD16U101J |
| R703 | Carbon film | 10 ohm | 1/6W | ±5% | N-0063ECC | RD16U100J |
| R704 | Carbon film | 1.2k ohm | 1/6W | ±5% | | RD16U122J |
| R705 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R706 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R707 | Carbon film | 10k ohm | 1/6W | ±5% | N-0281ECC | RD16U103J |
| R708 | Carbon film | 180k ohm | 1/6W | ±5% | N-0387ECC | RD16U184J |
| R709 | Carbon film | 22 ohm | 1/6W | ±5% | | RD16U220J |
| R710 | Carbon film | 150 ohm | 1/6W | ±5% | | RD16U151J |
| R711 | Carbon film | 6.8k ohm | 1/6W | ±5% | N-0262ECC | RD16U682J |
| R801† | Solid | 1.8M ohm | 1/2W | ±10% | N-0521FFB | ERC-12GK185 |

† See Appendix (page 54) for ITI models.

**CRYSTALS & FILTERS**

| Ref. No. | Descriptoin | | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|---|
| X1 | Crystal | TC-43 type | 37.8 MHz | CX-0551 | 37.8 MHz |
| X2 | Crystal | TC-43 type | 48.045 MHz | CX-0552 | 48.045 MHz |
| X301 | Crystal | TX1824G-3 type | 10 MHz | CX-0480 | 10 MHz |
| CX501 | Ceramic Oscillator | | 7.37 MHz | | CST7.37MT |
| XF1 | Crystal Filter | MF48RB type | 48.5 MHz | C-1923 | 48.5 MHz |
| XF2 | Crystal Filter | MF48RB type | 48.5 MHz | C-1923 | 48.5 MHz |
| CF1 | Ceramic Filter | | 10.7 MHz | C-1924 | SFJ10.7 MA2-A |
| CF2 | Ceramic Filter | | 455 kHz | C-1044 | CFW455D |

**VARIABLE RESISTORS**

| Ref. No. | Description | | RS Part Number | MFR's Part Number |
|---|---|---|---|---|
| VR801 | Pot. Volume w/Switch | 50k ohm (A) | P-7787 | 5M1411-50KA-20A |
| VR802 | Pot. Squelch | 10k ohm (C) | P-8029 | K1611008TE-10KC-20 |

| MISCELLANEOUS | | | | |
|---|---|---|---|---|
| Ref. No. | Description | | RS Part Number | MFR's Part Number |
| CN-1 | Pin, connector | 3 Pin Male | J-5678 | PI22A03M |
| CN-2 | Pin, connector | 4 Pin Male | J-4050 | PI22A04M |
| CN-3 | Pin, connector | 2 Pin Male | J-4051 | PI22A02M |
| CN-4 | Pin, connector | 3 Pin Male | J-5678 | PI22A03M |
| CN-5 | Pin, connector | 2 Pin Male | J-4051 | PI22A02M |
| CN-6 | Pin, connector | 3 Pin Male | J-5678 | PI22A03M |
| CN-501 | Pin, connector | 9 Pin Male | | PI22A09M |
| CN-502 | Pin, connector | 13 Pin Male | | PI22A13M |
| CN-503 | Pin, connector | 8 Pin Male | | PI22A08M |
| CN-504 | Pin, connector | 15 Pin Male | | PI22A15M |
| CN-505 | Pin, connector | 11 Pin Male | | PI22A11M |
| EL701 | Electro Luminescence | | L-2082 | GE-85D-6011 |
| J1 | Jack | | J-5939 | TMP-J01X-V1 |
| J2 | Jack | | J-5939 | TMP-J01X-V1 |
| J3 | Jack, Tape Out | | J-1820 | JPJ0573-01-010 |
| J4 | Jack Ext. Speaker | | J-1821 | S-G8036 |
| J5 | Jack, DC | | J-1140 | HEC0470-01-630 |
| J6 | Jack, Antenna | | J-0085 | GE-85D-5383 |
| J801 | Jack, Head Phone | | J-1824 | S-G8022#2 |
| LCD701 | LCD | | | FTD-8200P |
| SW1 | Switch, slide (Attenuator) | | S-3627 | SSFZUB22-07 |
| SW501 | Switch, push (Reset) | | | SKHHLM |
| SW701 | Switch, push (Sound Squelch) | | S-7094 | ESB-64500 type 1 |
| SW702 | Switch, push (Dimmer) | | S-7094 | ESB-64500 type 1 |
| TH-1 | Thermister | | T-1024 | HT-100 |
| TP1 | Pin, test | | | ERD-25TC0 |
| TP2 | Pin, test | | | ERD-25TC0 |
| TP3 | Pin, test | | | ERD-25TC0 |
| TP4 | Pin, test | | | ERD-25TC0 |
| TP5 | Pin, test | | | ERD-25TC0 |
| TP301 | Pin, test | | | ERD-25TC0 |
| TP302 | Pin, test | | | ERD-25TC0 |
| | Antenna, rod | | | GE-86D-6519 |
| | Binder, AC cord | | | NO.5121/W-140 |
| | Binder, cord | | | PLT1M-M/BK-1 |
| | Cord, AC | 6.5 feet (UL) | | GE-86D-6312 |
| | Foot | | | OK15 |
| | Snap, battery w/cable | 1 type, L=250mm | B-0209 | |
| SP801 | Speaker | | SP-5374 | SM-77KY-2 |
| | Strainrelief, Line Cord | | HB-0705 | SR-3P-4 |
| | Switch, push | | S-7093 | SKHHPK |
| | Terminal, solderless | | HB-9616 | 1-SD |
| | Wire Kit | | | #327(A) |

# MECHANICAL PARTS LIST

| Ref. No. | Description | RS Part Number | MFR's Part Number |
|---|---|---|---|
| 1 | Cabinet | Z-1484 | GE-86B-6360 |
| 2 | Chassis | | GE-86A-6359 |
| 3 | PCB Ass'y, Linear | | GA-86D-6316 |
| 4 | Bracket, Antenna Connector | | GE-86D-6362 |
| 5 J6 | Jack, Antenna | J-0085 | GE-85D-5383 |
| 6 | Shield, Antenna | | GE-86D-6381 |
| 7 | Case, IF Shield | | GE-86D-6377 |
| 8 | Case, BPF Shield | | GE-86D-6379 |
| 9 | Top, IF Shield | | GE-86D-6378 |
| 10 | Top, BPF Shield | | GE-86D-6380 |
| 11 | Plate, 1st IF Shield | | GE-86D-6605 |
| 12 | Heat Sink | | GE-86D-6363 |
| 13 | PCB Ass'y, PLL | | GA-86D-6317 |
| 14 | Bottom PLL Shield (A) Filter | | GE-86D-6511 |
| 15 | Bottom PLL Shield (A) VCO | | GE-86D-6510 |
| 16 | Bottom PLL Shield (B) IC | | GE-86D-6513 |
| 17 | Bottom PLL Shield (B) VCO | | GE-86D-6512 |
| 18 | Fiber, PLL Shield (A) Filter | | GE-86D-6515 |
| 19 | Fiber, PLL Shield (A) VCO | | GE-86D-6514 |
| 20 | Fiber, PLL Shield (B) IC | | GE-86D-6517 |
| 21 | Fiber, PLL Shield (B) VCO | | GE-86D-6516 |
| 22 | Case, PLL Shield (A) | | GE-86D-6368 |
| 23 | Case, PLL Shield (B) | | GE-86D-6372 |
| 24 | Case, PLL Shield (C) | | GE-86D-6376 |
| 25 | Top, PLL Shield (A) | | GE-86D-6369 |
| 26 | Top, PLL Shield (B) | | GE-86D-6373 |
| 27 | Plate, PLL Shield (D) VCO | | GE-86D-6528 |
| 28 | PCB Ass'y, Logic | | GA-86D-6318 |
| 29 | Case Logic Shield | | GE-86D-6388 |
| 30 | Top, Logic Shield | | GE-86D-6389 |
| 31 | Fiber, Logic Shield | | GE-86D-6529 |
| 32 T801 | Transformer, Power | TA-0127 | GE-85D-5667 |
| 33 | Box, Battery | DB-0741 | GE-21D-5728 |
| 34 | Cover, Battery Compartment | DB-0094 | GE-79D-0113 |
| 35 | Cushion, Battery | | GE-21D-5795 |
| 36 | Cord, AC 6.5 feet (UL) | W-3388 | GE-86D-6312 |
| 37 SP801 | Speaker 8 ohm 2W | SP-5374 | SM-77KY-2 |
| 38 | Bracket Speaker | | GE-86D-6361 |
| 39 | Mattress, Speaker | | GE-86D-6505 |
| 40 | Escutcheon Ass'y, Front (Non Repairable) | Z-1483 | GA-86D-6385 |
| | Escutcheon, Front | | GE-86A-6354 |
| | Protecter, Escutcheon | | GE-86C-6500 |
| | Window, LCD | | GE-86D-6355 |
| 41 | PCB Ass'y, LCD | | GA-86D-6319 |
| 42 LCD701 | LCD | | FTD-8200P |
| 43 | Electro Luminescence | | GE-85D-6067 |
| 44 | Holder, LCD | | GE-85D-6386 |
| 45 | Cushion, LCD | | GE-85D-6521 |
| 46 | Knob, Dimmer/Sound Squelch | K-1064 | GE-86D-6357 |
| 47 | Shield, LCD | | GE-86D-6364 |
| 48 | Fiber, LCD Shield | | GE-86D-6365 |
| 49 | PCB Ass'y, Keyboard | | GA-86D-6320 |
| 50 | Shield, Keyboard | | GE-86D-6366 |
| 51 | Fiber, Keyboard | | GE-86D-6367 |
| 52 | Plate, Ground | | GE-86D-6509 |
| 53 | Volume, Switch | | 5M1411-50KA-20A |
| 54 | Squelch, Volume | | K1611008TE-10KC-20 |

| Ref. No. | Description | RS Part Number | MFR's Part Number |
|---|---|---|---|
| 55 | Jack, Head Phone | J-1824 | S-G8022#2 |
| 56 | Knob, Volume/Squelch | K-1063 | GE-86D-6356 |
| 57 | Antenna, Telescopic | A-0083 | GE-86D-6519 |
| 58 | Foot | F-0054 | OK-15 |
| 59 | Panel, Keybaord | Z-1482 | GE-86D-6358 |
| 60 | Himelon (A) | | GE-86D-6522 |
| 61 | Himelon (B) | | GE-86D-6523 |
| 62 | Himelon (C) | | GE-86D-6524 |
| 63 | Himelon Speaker | | GE-86D-6387 |
| 64 | Screw, Panhead With Washer Ass'y Tind ZU | | PM2.6x5 |
| 65 | Screw, Panhead With Washer Ass'y ZU | | PM3x6 |
| 66 | Screw, Panhead P tight | | PT2.6x5 |
| 67 | Screw, Panhead Tapping | | PT3x6 |
| 68 | Screw, Panhead | | PM3x6 |
| 69 | Screw, Panhead Tapping | | PT2.6x6 |
| 70 | Screw, Panhead P tight | | PT3x8 |
| Ⓐ | Screw, Bindinghead BLK | | BM3x6 |
| 71 | Screw, Bindinghead With Washer Ass'y ZU | | BM3x12 |
| 72 | Screw, Bindinghead | HD-1814 | BM4x8 |
| 73 | Screw, Bindinghead Tapping | | BT3x6 |
| 74 | Screw, Bindinghead | | GE-79D-0541 |
| 75 | Screw, Countersunkhead Machine | HD-2585 | CM3x6 |
| 76 | Washer, External Toothed Lock 3m/m | | ETW 3m/m |
| 77 | Washer, Internal Toothed Lock 3m/m | HD-8966 | ITW 3m/m |
| 78 | Nut, flange serrated | | 3 DIA |
| 79 | Nut, flange serrated | | 4 DIA |
| 80 | Nut | | 7 DIA |
| 81 | Nut, Grommet | | |
| | Hardware Kit | HW-200019 | #327(B) |

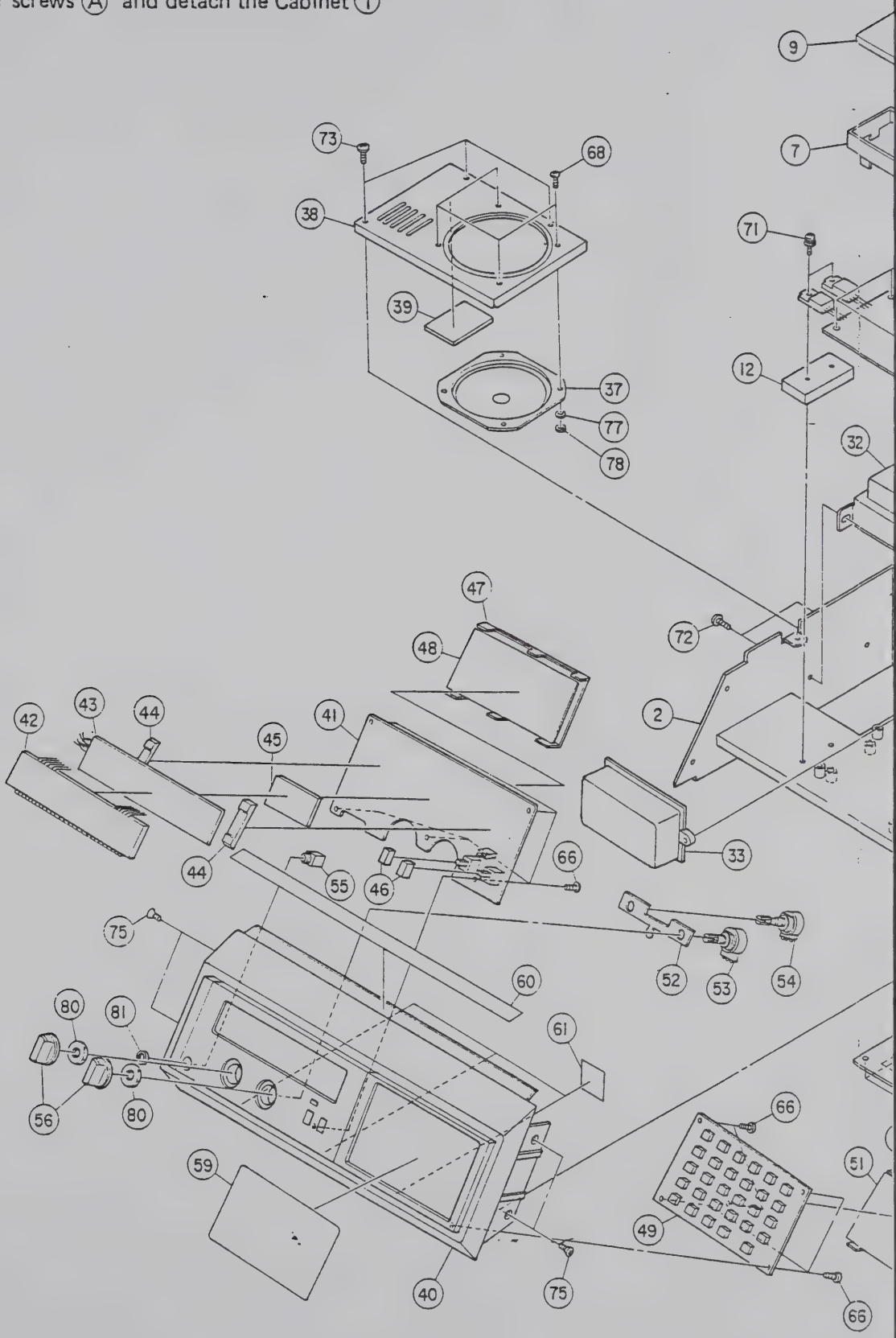
# APPENDIX

**Variable parts for each model are below.**

| Ref. No. | Description | USA | CANADA | AUSTRALIA | UK |
|---|---|---|---|---|---|
| R214 | Metal Film 3.3 ohm 1W ±0.5% | RNS1.0-3R3J | – | RNS1.0-3R3J | RNS1.0-3R3J |
| | Metal Film 3.3 ohm 1/2W ±0.5% | – | ERQ-12AJ-3R3 | – | – |
| R235 | Metal Film 1 ohm 1W ±0.5% | RSN1.0-010J | – | RNS1.0-010J | RNS1.0-010J |
| | Metal Film 2.2 ohm 1W ±0.5% | – | ERQ-1AJ-2R2 | – | – |
| R801 | Solid Film 1.8M ohm 1/2W ±10% | ERC-12GK-185 | ERC-12GK-185 | Not used | Not used |
| D512 | 1S2076A (Silicon) | Not used | Not used | 1S2076A | 1S2076A |
| T801 | Transformer, Power | GE-85D-5667 | Z1643 | K7087 | K7087 |
| | Cord, AC | GE-86D-6312 | GE-86D-6312 | PZ-ACTF-LD-AS | HAR CLASS II BLK 2m |
| | Strainrelief, Line Cord | SR-3P-4 | SR-3P-4 | SR-5N-4 | SR-4N-4 |
| | Chassis | GE-86A-6359 | GE-86A-6359 | GE-86A-6359A | GE-86A-6359A |

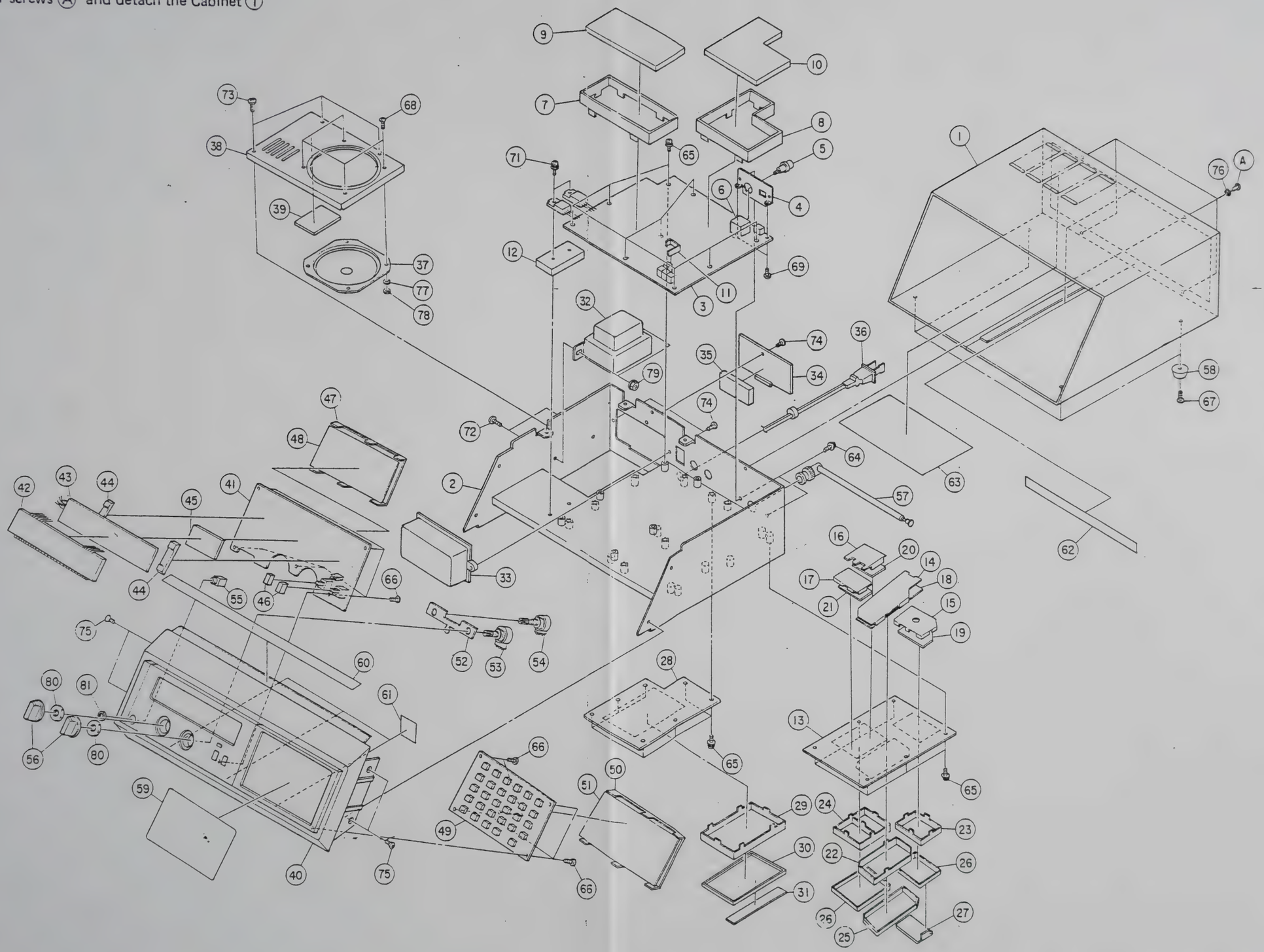
# DISASSEMBLY / EXPLODED VIEW

Remove four screws Ⓐ and detach the Cabinet ①

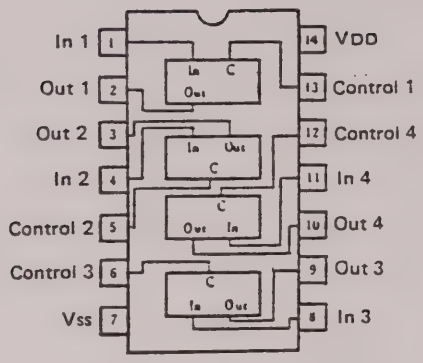


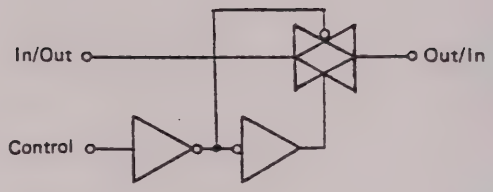
# DISASSEMBLY / EXPLODED VIEW

Remove four screws (A) and detach the Cabinet (1)

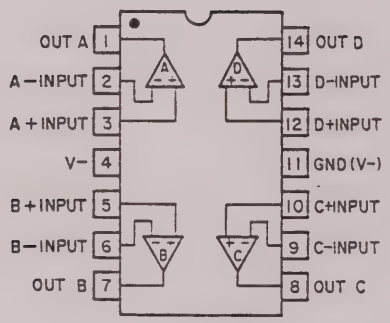


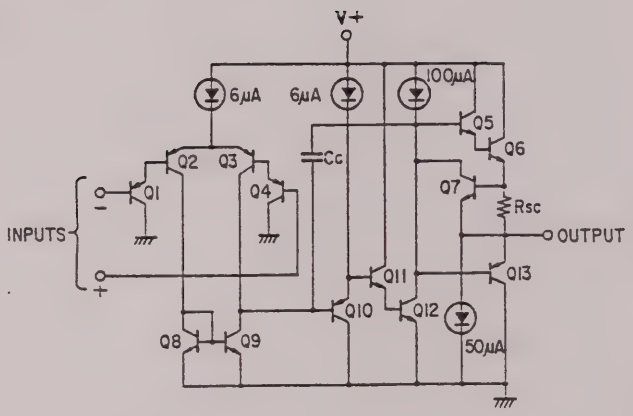
## IC4 HD14066BP



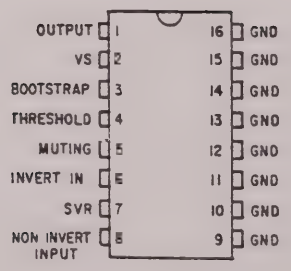



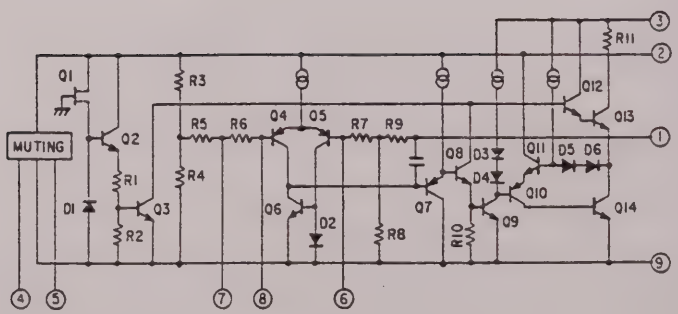

## IC5, 6 μPC324C



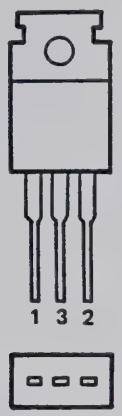




## IC7 TDA1905

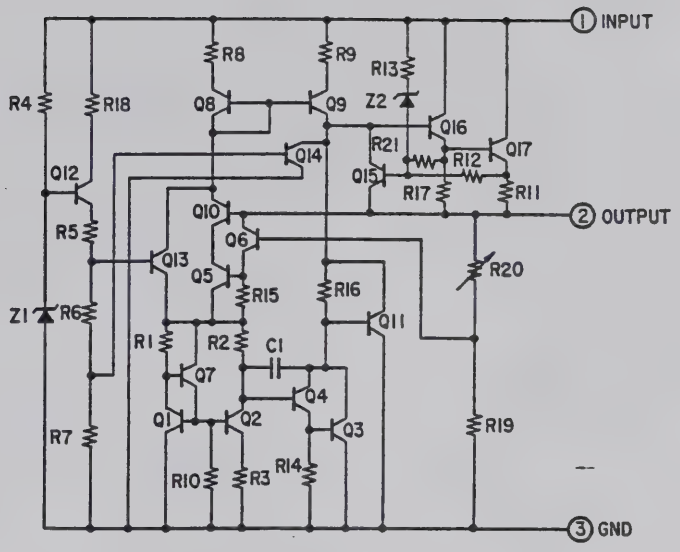


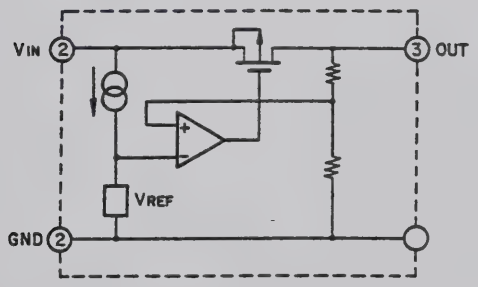
## IC8 TA78005AP or HA17805



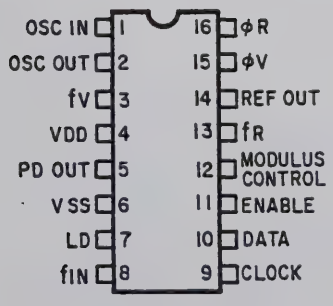

1. INPUT
2. OUTPUT
3. GND

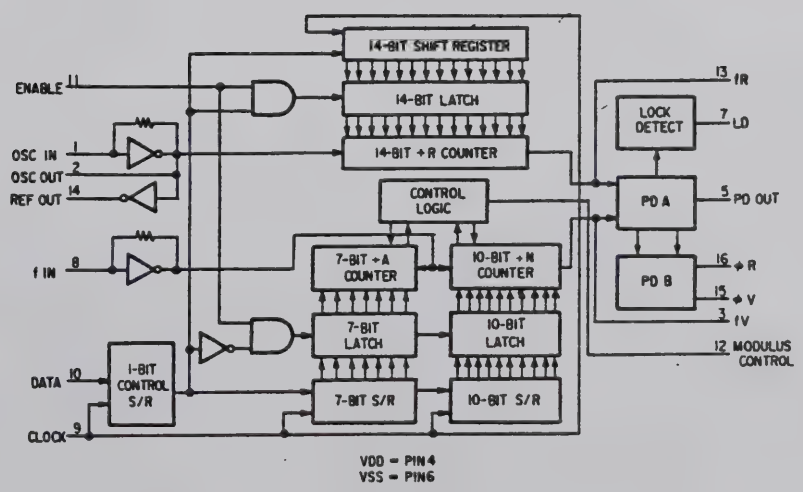



## IC9 S-81250HG

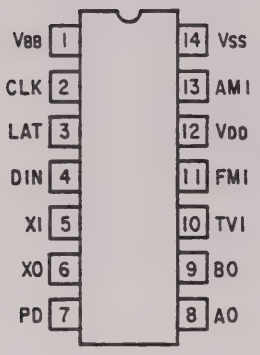



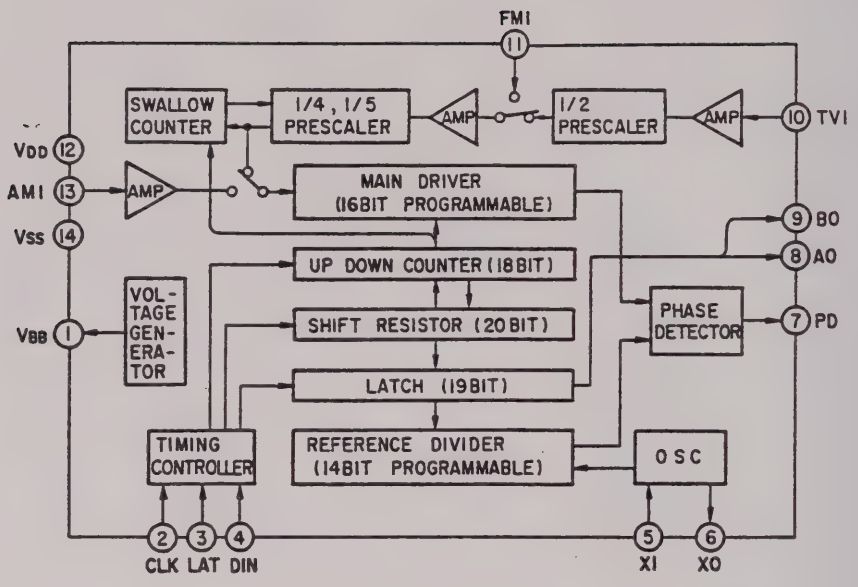

## IC301 MC145158



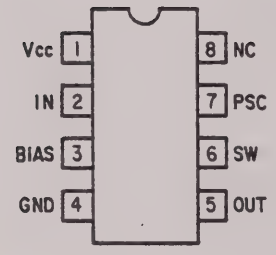



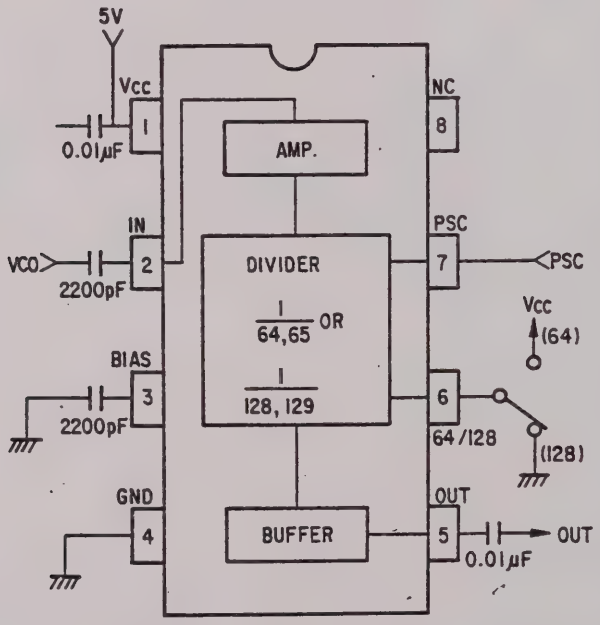
## IC302 CX7925B



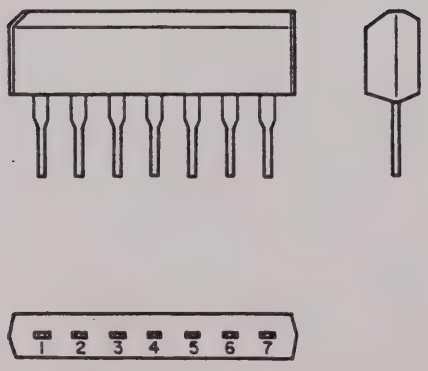



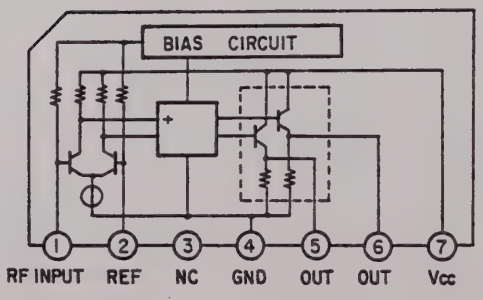

## IC303 TD6127AP



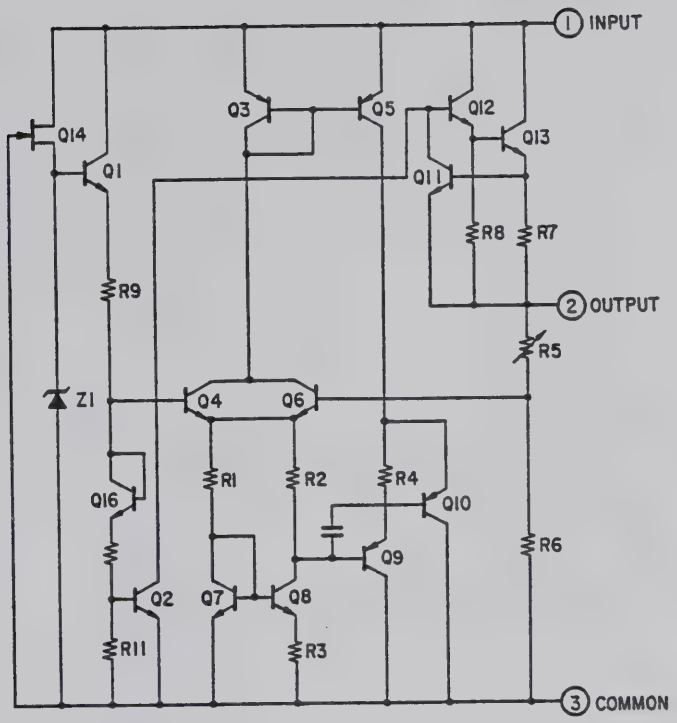

## IC304 TD6105AP



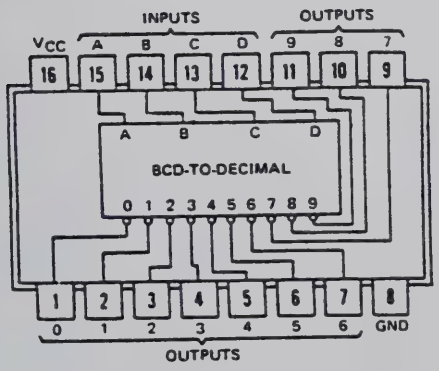



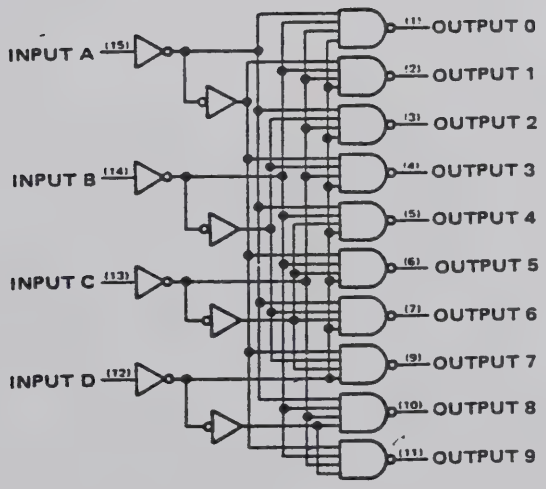
## IC305, 306 TA78L005AP


1. INPUT
2. OUTPUT
3. COMMON

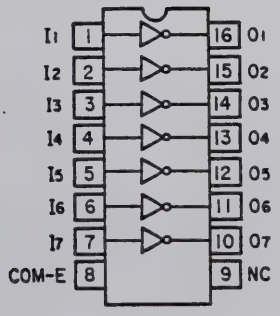


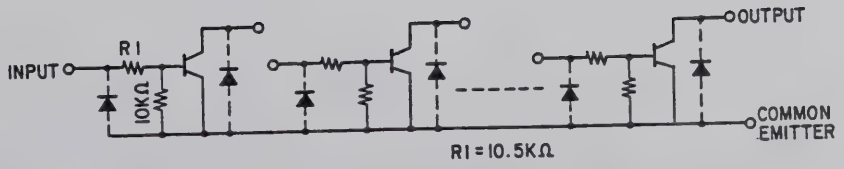

## IC501 SN74LS145 or HD74LS145



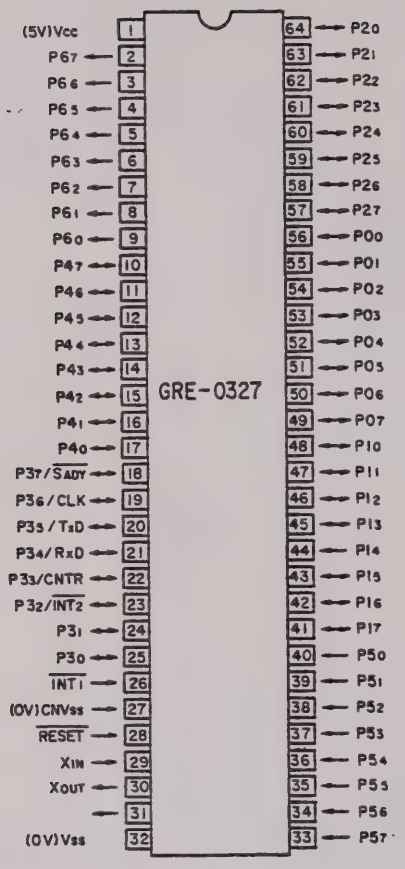



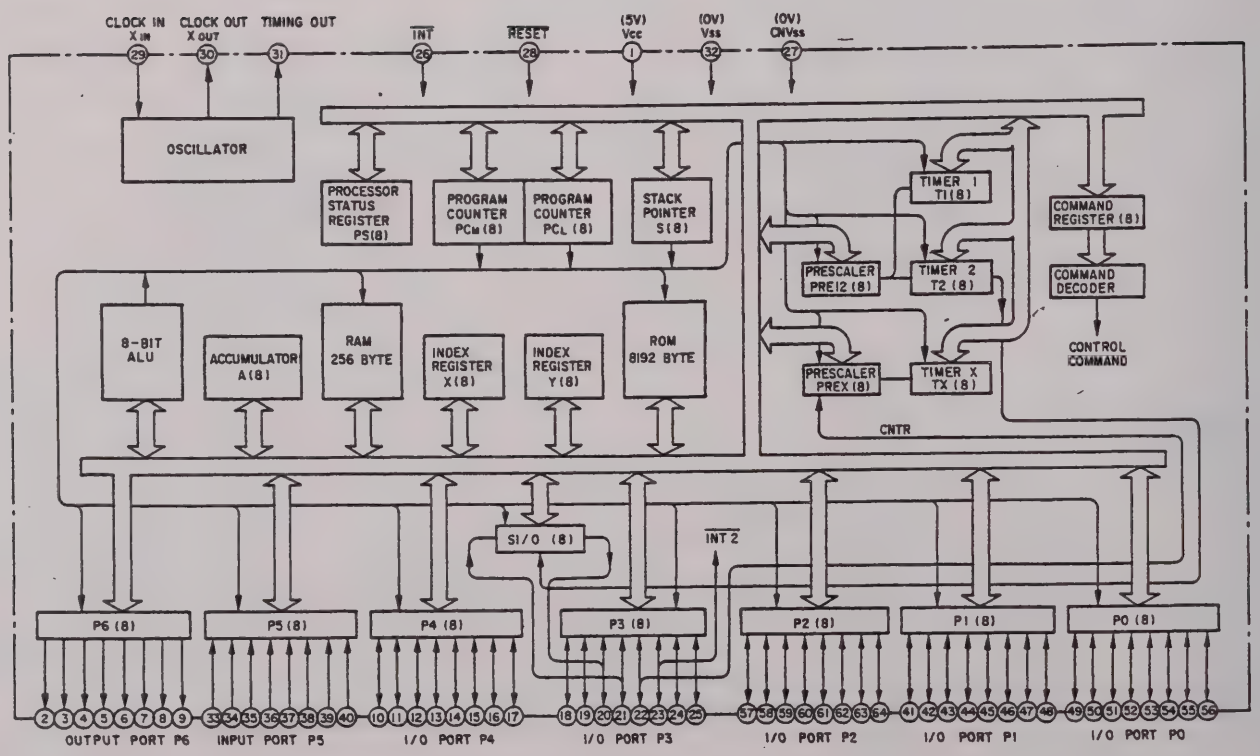

## IC502 TD62504P



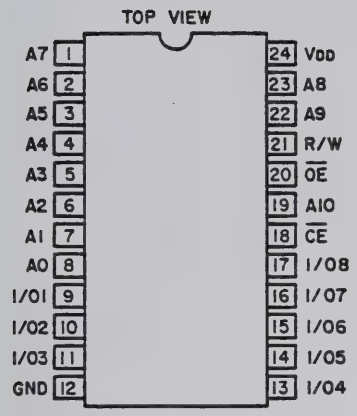



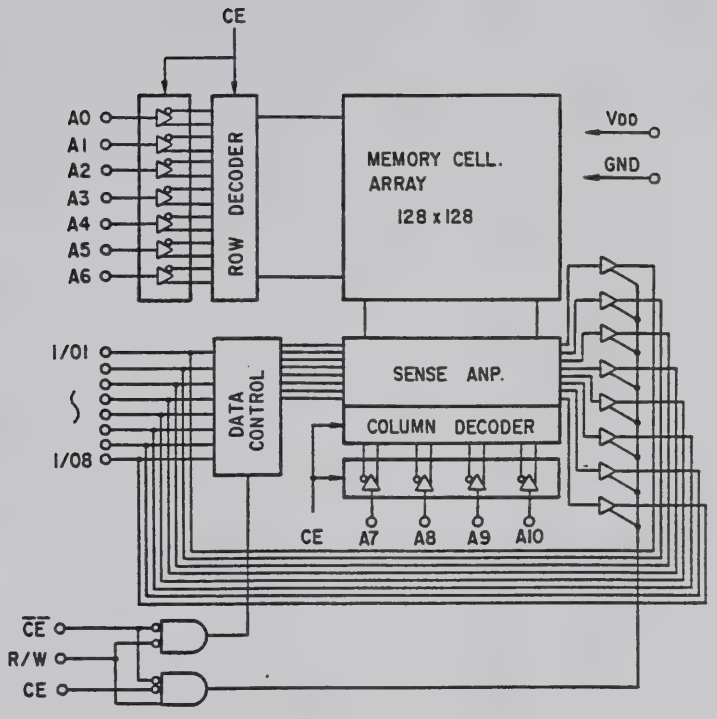
## IC503 GRE-0327



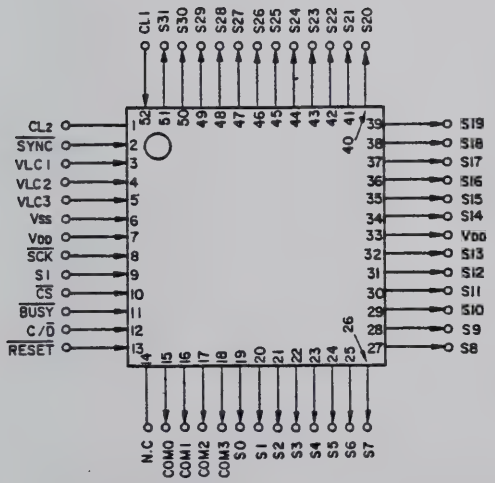



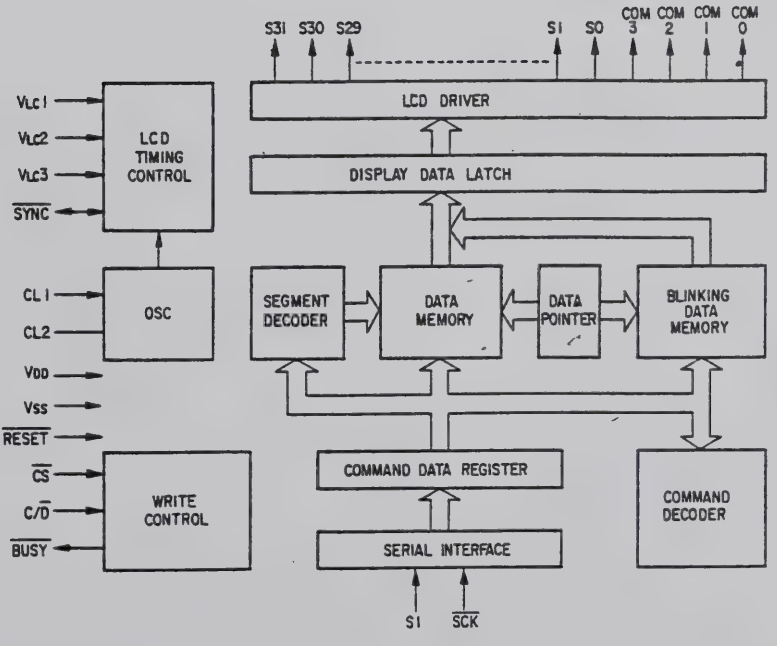
## IC504 TC5517CF-20 or μPD446G-45



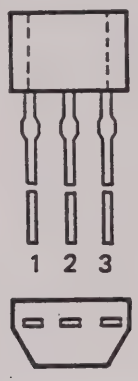

## IC701 μPD7225G



# TRANSISTOR LEAD IDENTIFICATION

(A) 2SC2458(Y,GR)
2SC2458L(GR)
2SC2668(Y)
2SA1048
2SC3327
RN2201

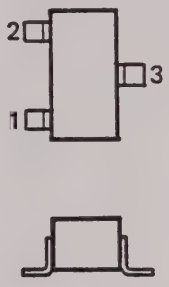



1. EMITTER
2. COLLECTOR
3. BASE

(B) 2SC3355

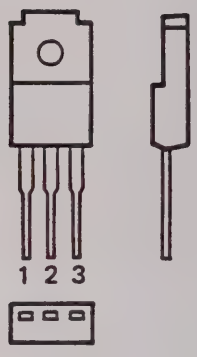

1. BASE
2. EMITTER
3. COLLECTOR

(C) 2SC3356



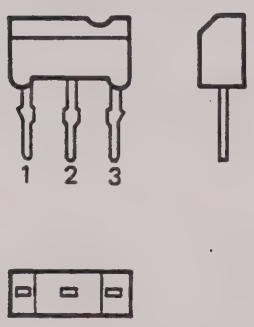

1. EMITTER
2. BASE
3. COLLECTOR

(D) 2SD1406



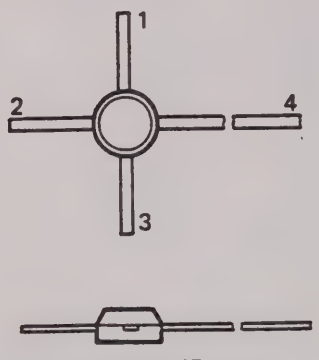

1. BASE
2. COLLECTOR
3. EMITTER

(E) 2SD1330




1. BASE
2. COLLECTOR
3. EMITTER

(F) 2SC3358




1. EMITTER
2. BASE
3. EMITTER
4. COLLECTOR

(G) 2SK184(GR)


1. DRAIN
2. GATE
3. SOURCE

(H) 2SK194A(GR)


1. DRAIN
2. SOURCE
3. GATE

(I) 2SC945(AQ)

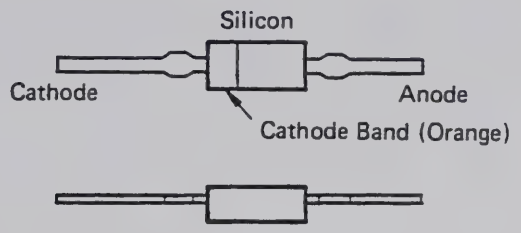

1. EMITTER
2. COLLECTOR
3. BASE

(J) RN2005

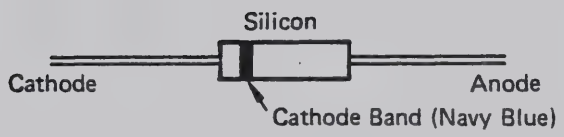

1. EMITTER
2. COLLECTOR
3. BASE

# DIODE IDENTIFICATION AND LEAD POLARITY

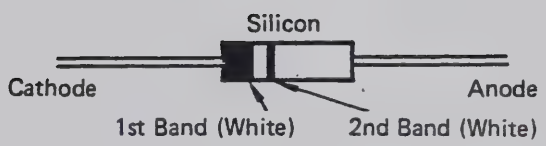
A) 1SS241



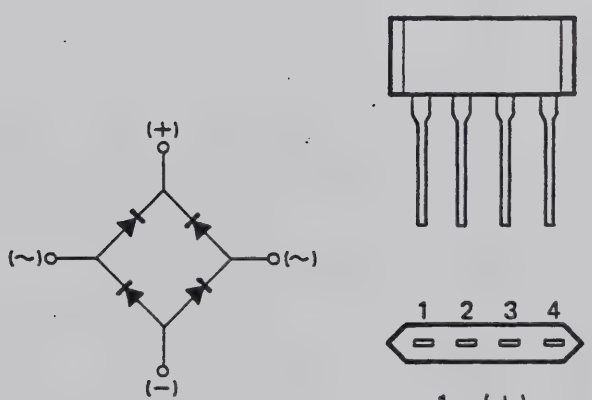

B) 1S2076A



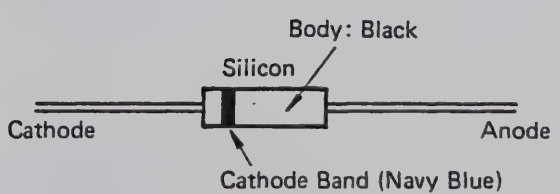

C) SR1K-2



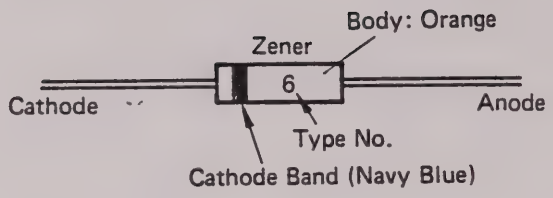

D) 1B4B41



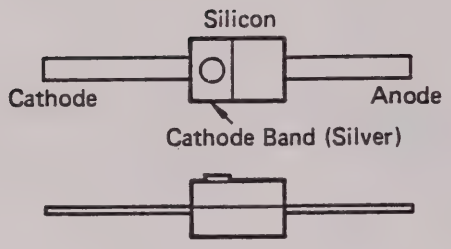

E) 1S1585



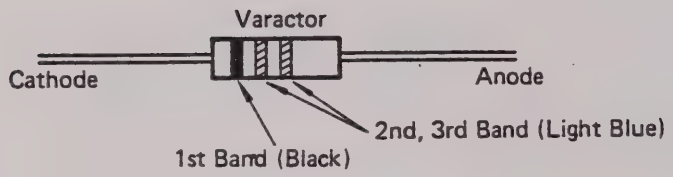
F) HZ6B2L, HZ9BLL
HZ11BLL



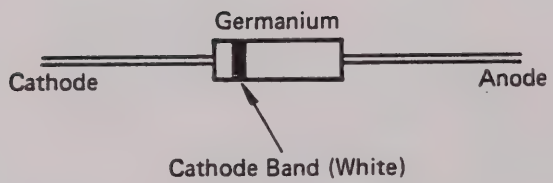

G) 1T25



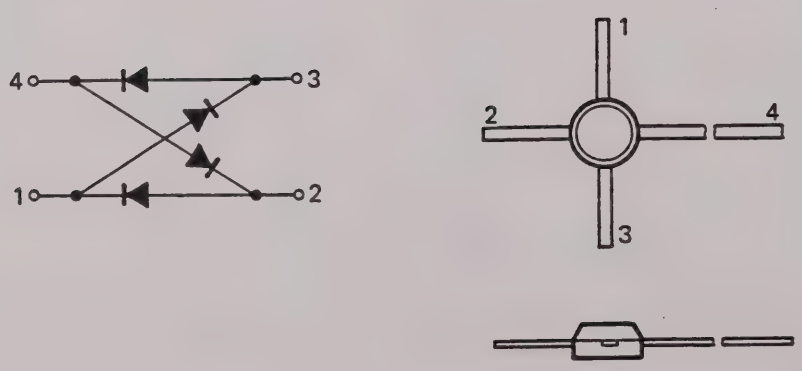

H) 1SV89



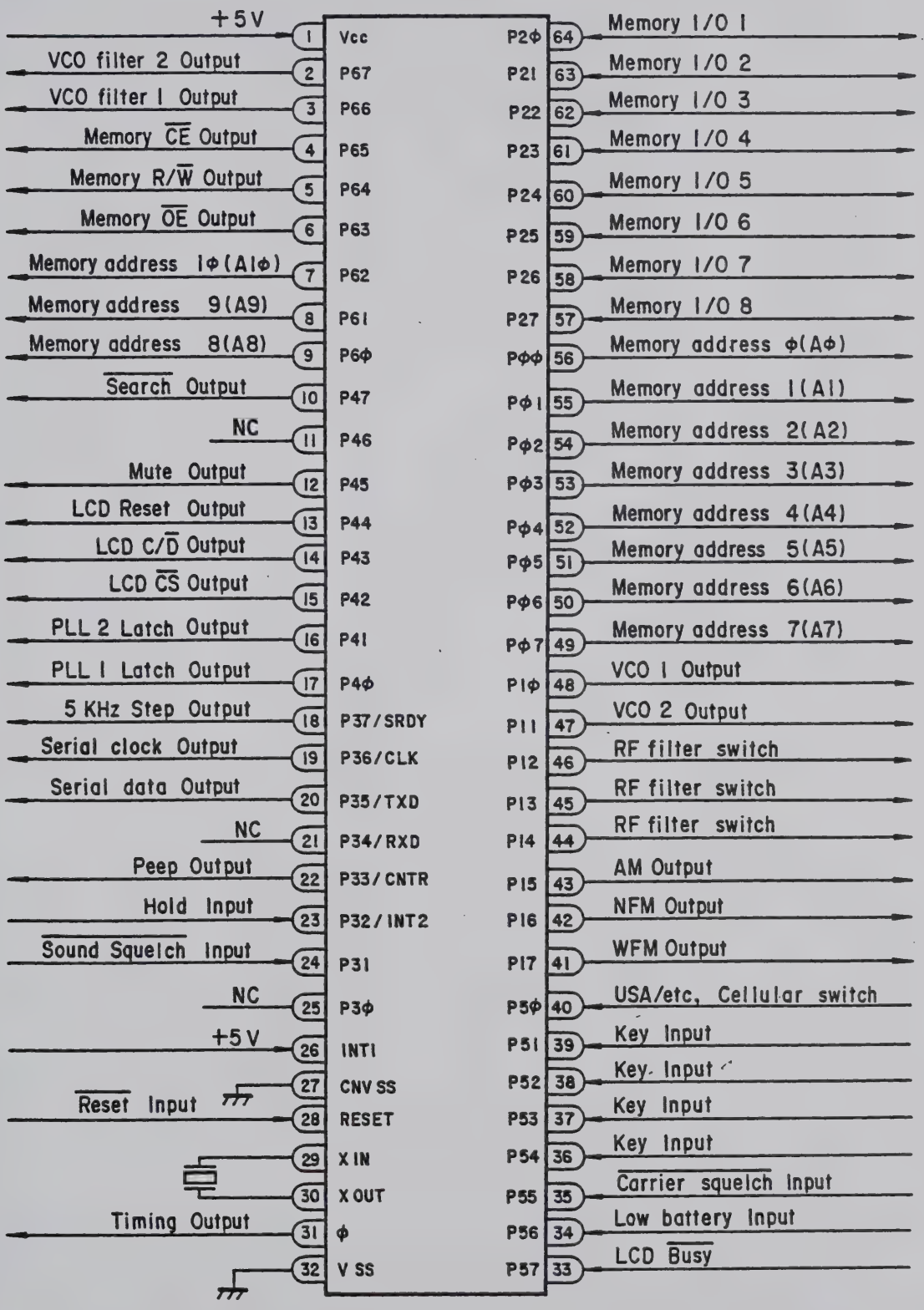

I) OA90-R




J) ND487CI-3R



# MICROPROCESSOR (IC-503) PIN ALLOCATION



# MICROPROCESSOR (IC-503) PORT FORMAT

| Pin No. | Symbol | Function | Pin No. | Symbol | Function |
|---|---|---|---|---|---|
| 1 | VCC | +5 V | 33 | P57 | LCD Busy |
| 2 | P67 | VCO filter 2 Output | 34 | P56 | Low battery Input |
| 3 | P66 | VCO filter 1 Output | 35 | P55 | Carrier Squelch Input |
| 4 | P67 | Memory CE Output | 36 | P54 | Key Input |
| 5 | P64 | Memory R/W Output | 37 | P53 | Key Input |
| 6 | P63 | Memory OE Output | 38 | P52 | Key Input |
| 7 | P62 | Memory address 10 (A10) | 39 | P51 | Key Input |
| 8 | P61 | Memory address 9 (A9) | 40 | P50 | USA/etc., Cellular Switch |
| 9 | P60 | Memory address 8 (A8) | 41 | P17 | WFM Output |
| 10 | P47 | Search Output | 42 | P16 | NFM Output |
| 11 | P46 | NC | 43 | P15 | AM Output |
| 12 | P45 | Mute Output | 44 | P14 | RF filter Switch |
| 13 | P44 | LCD Reset Output | 45 | P13 | RF filter Switch |
| 14 | P43 | LCD C/D Output | 46 | D12 | RF filter Switch |
| 15 | P42 | LCD CS Output | 47 | P11 | VCO 2 Output |
| 16 | P41 | PLL 2 Latch Output | 48 | P10 | VCO 1 Output |
| 17 | P40 | PLL 1 Latch Output | 49 | P07 | Memory address 7 (A7) |
| 18 | P37/SRDY | 5 kHz Step Output | 50 | P06 | Memory address 6 (A6) |
| 19 | P36/CLK | Serial Clock Output | 51 | P05 | Memory address 5 (A5) |
| 20 | P35/TxD | Serial Data Output | 52 | P04 | Memory address 4 (A4) |
| 21 | P34/RxD | NC | 53 | P03 | Memory address 3 (A3) |
| 22 | P33/CNTR | Peep Output | 54 | P02 | Memory address 2 (A2) |
| 23 | P32/INT2 | Hold Input | 55 | P01 | Memory address 1 (A1) |
| 24 | P31 | Sound Squelch Input | 56 | P00 | Memory address 0 (A0) |
| 25 | P30 | NC | 57 | P27 | Memory I/O 8 |
| 26 | INT1 | +5 V | 58 | P26 | Memory I/O 7 |
| 27 | $CNV_{SS}$ | GND | 59 | P25 | Memory I/O 6 |
| 28 | RESET | Reset Input | 60 | P24 | Memory I/O 5 |
| 29 | $X_{IN}$ | Clock Input | 61 | P23 | Memory I/O 4 |
| 30 | $X_{OUT}$ | Clock Output | 62 | P22 | Memory I/O 3 |
| 31 | $\phi$ | Timing Output | 63 | P21 | Memory I/O 2 |
| 32 | $V_{SS}$ | 0 V | 64 | P20 | Memory I/O 1 |

# MICROPROCESSOR (IC-503) FUNCTION TABLE

**(1) Outputs of VCO (P10, P11) and VCO filter (P66, P67)**

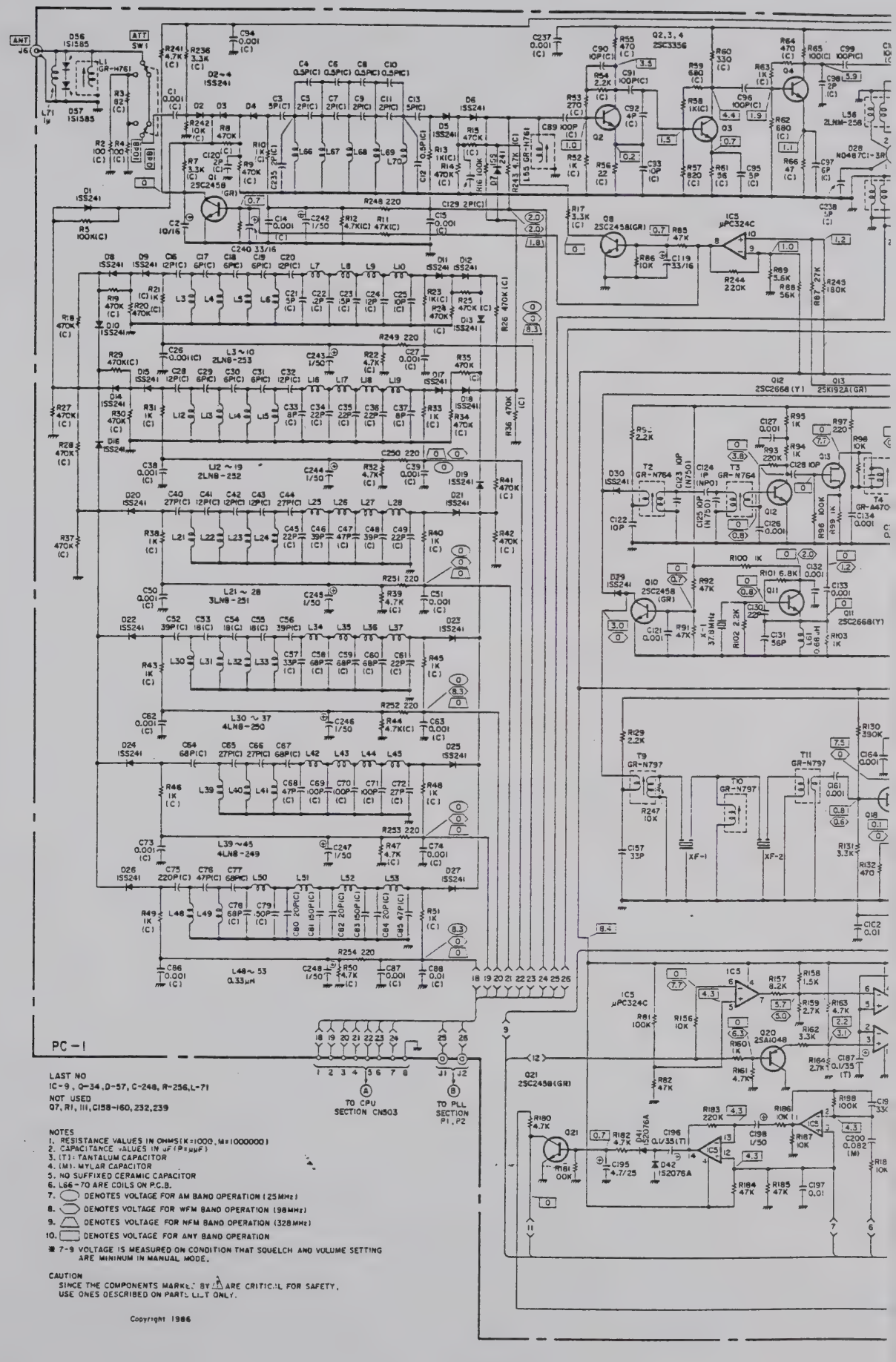
| Receiving Frequency (MHz) | VCO Output | VCO filter Output |
|---|---|---|
| 25.0000 to 220.4950 | VCO 1 (P10) "H" | VCO filter 1 (P66) "H" Level |
| 220.5000 to 520.0000 | VCO 2 (P11) "H" | |
| 760.0000 to 1052.4950 | VCO 1 (P10) "H" | VCO filter 2 (P67) "H" Level |
| 1052.5000 to 1300.0000 | VCO 2 (P11) "H" | |

**(2) Outputs of RF filter (P12, P13, P14)**

| Receiving Frequency (MHz) | P12 | P13 | P14 |
|---|---|---|---|
| 25.0000 to 39.9950 | H | L | L |
| 40.0000 to 67.9950 | L | H | L |
| 68.0000 to 107.9950 | H | H | L |
| 108.0000 to 173.9950 | L | L | H |
| 174.0000 to 279.9950 | H | L | H |
| 280.0000 to 520.0000 | L | H | H |
| 760.0000 to 1300.0000 | H | H | H |

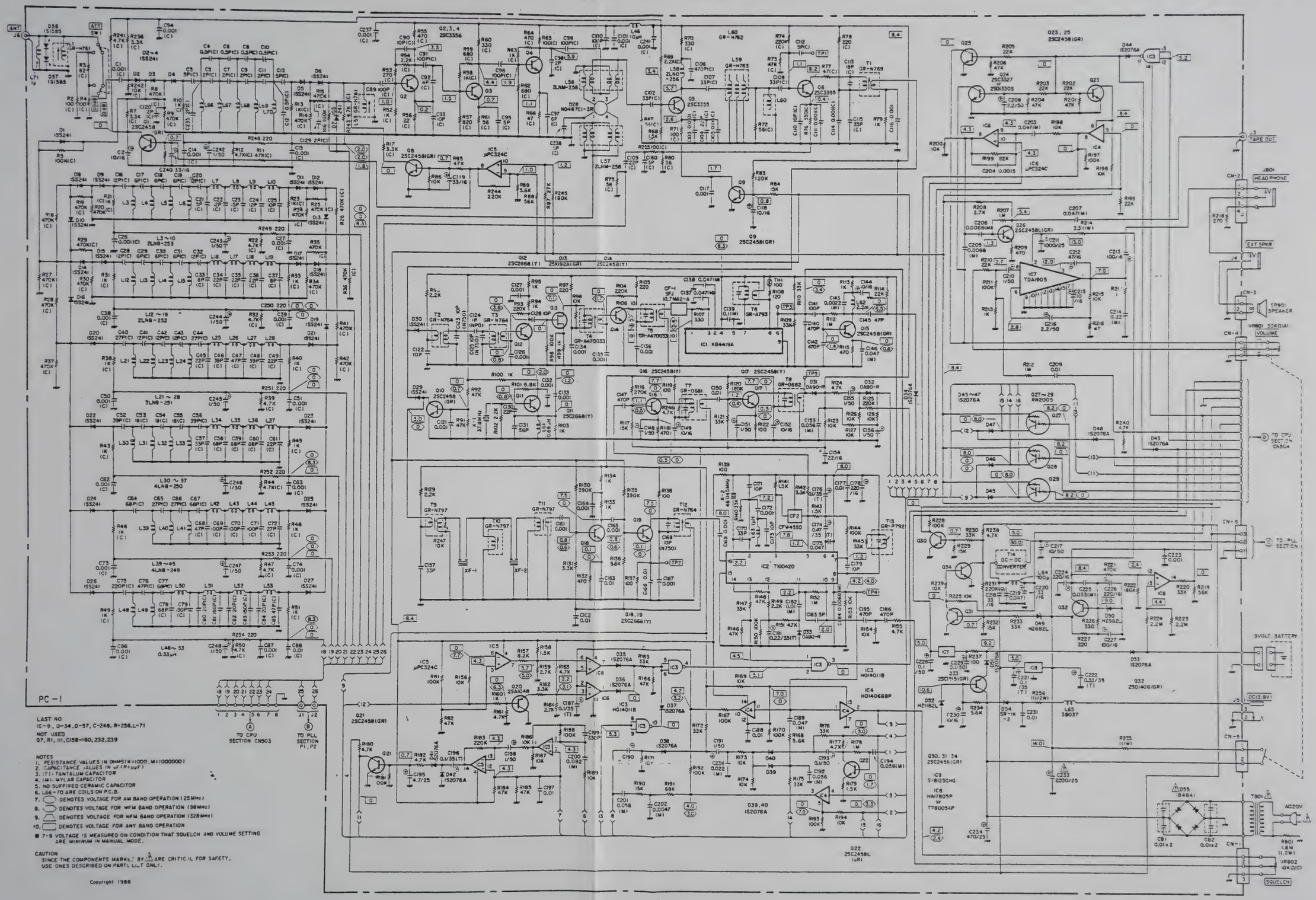
**(3) Outputs of Search (P47) and 5 kHz Step (P37)**

| | | | $\overline{\text{Search}}$ Output (P47) | 5 kHz Step Output (P37) |
|---|---|---|---|---|
| MANUAL Operation | | | H | L |
| PROGRAM Operation | | | H | L |
| SCAN Operation | | | H | L |
| In SEARCH Operation | Receiving Frequency 25 to 520 MHz | at 5 kHz Step | L | H |
| | | at Other Step | L | L |
| | Receiving Frequency 760 to 1300 MHz | at 5 kHz Step | L | H |
| | | at Other Step | L | L |


PC-1
LAST NO
IC-9, Q-34, D-57, C-248, R-256, L-71
NOT USED
Q7, R1, 111, C158-160, 232, 239
NOTES
1. RESISTANCE VALUES IN OHMS (K=1000, M=1000000)
2. CAPACITANCE VALUES IN uF (P=pF)
3. (T): TANTALUM CAPACITOR
4. (M): MYLAR CAPACITOR
5. NO SUFFIXED CERAMIC CAPACITOR
6. L66-70 ARE COILS ON P.C.B.
7. DENOTES VOLTAGE FOR AM BAND OPERATION (25MHz)
8. DENOTES VOLTAGE FOR WFM BAND OPERATION (98MHz)
9. DENOTES VOLTAGE FOR NFM BAND OPERATION (328MHz)
10. DENOTES VOLTAGE FOR ANY BAND OPERATION
* 7-9 VOLTAGE IS MEASURED ON CONDITION THAT SQUELCH AND VOLUME SETTING ARE MINIMUM IN MANUAL MODE.
CAUTION
SINCE THE COMPONENTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED ON PARTS LIST ONLY.
TO CPU SECTION CN503
TO PLL SECTION P1, P2
Copyright 1986

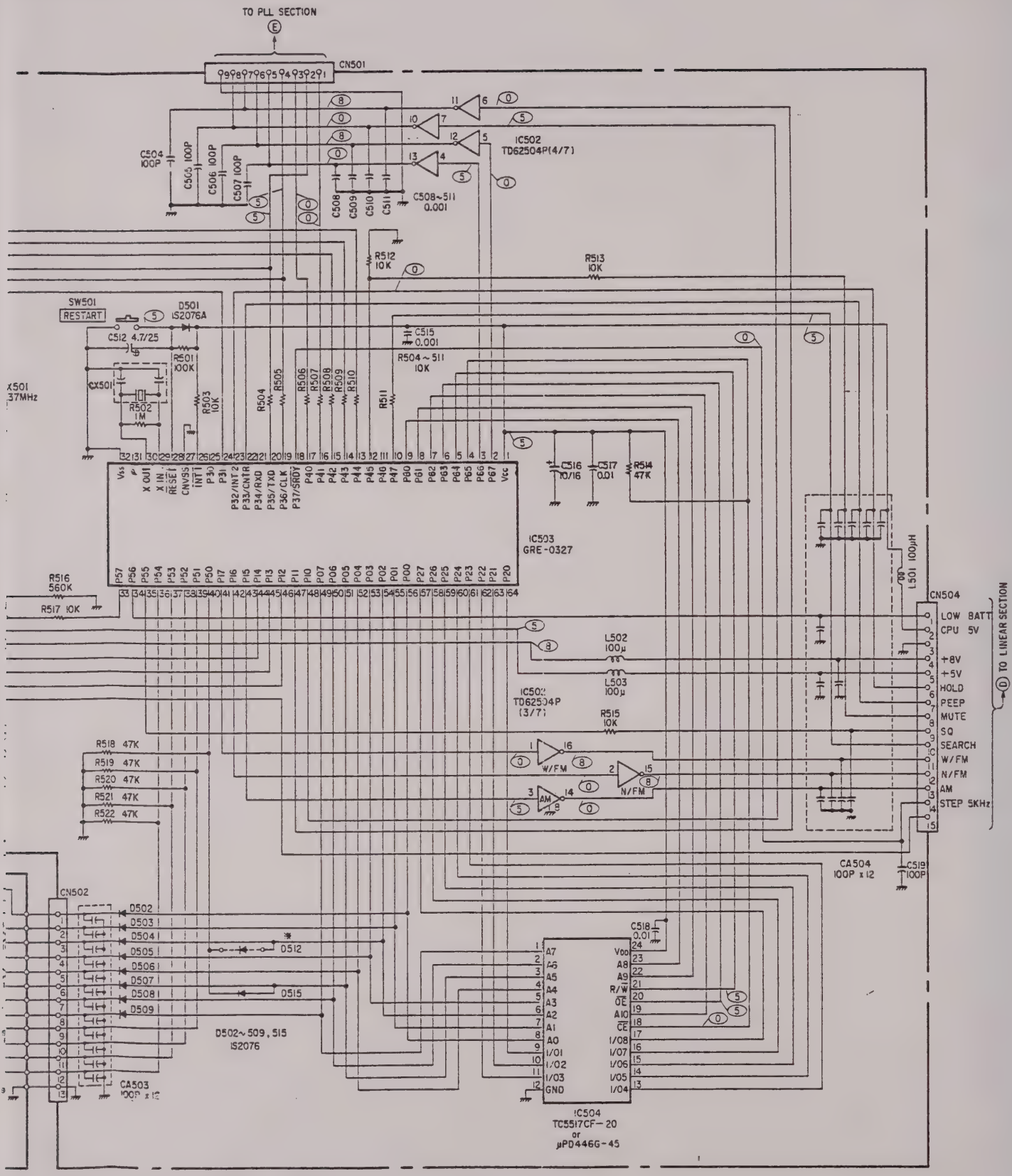
# SCHEMATIC DIAGRAM (LINEAR SECTION)

Cat. No. 20-119/9119



# )IAGRAM (CPU SECTION)

Cat. No. 20-119/9119



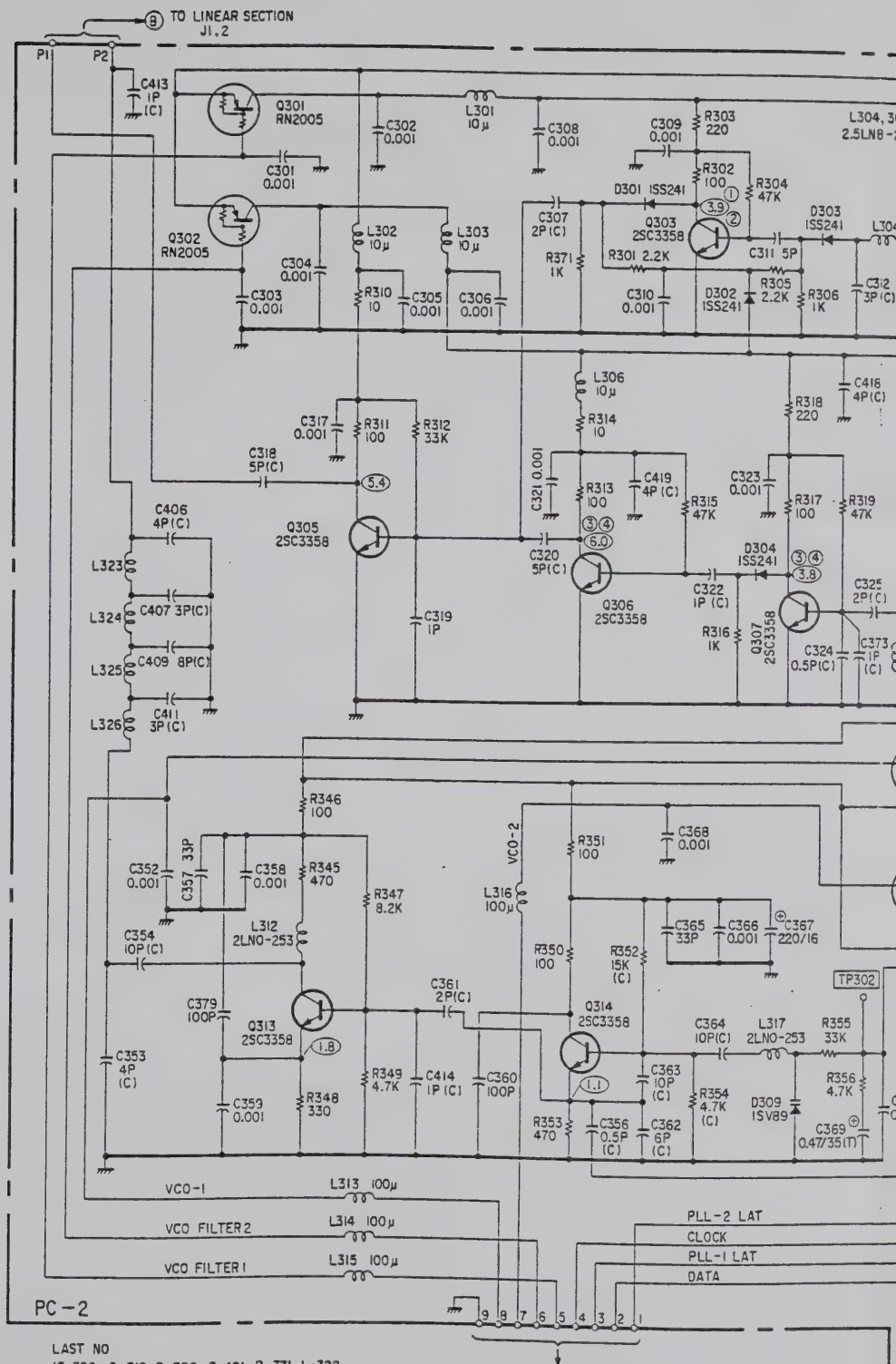

LAST NO.

| LOGIC | LCD |
|---|---|
| IC-504 | IC-701 |
| Q-507 | Q-701 |
| D-515 | D-701 |
| C-519 | C-706 |
| R-522 | R-711 |

NOT USED
D510,511,513,514
C513,514

CAUTION:
SINCE THE COMPONENTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED ON PARTS LIST ONLY.

* D512
FOR EUROPEAN/AUSTRALIAN MODELS ONLY




LAST NO
IC-306, Q-319, D-309, C-421, R-371, L-322

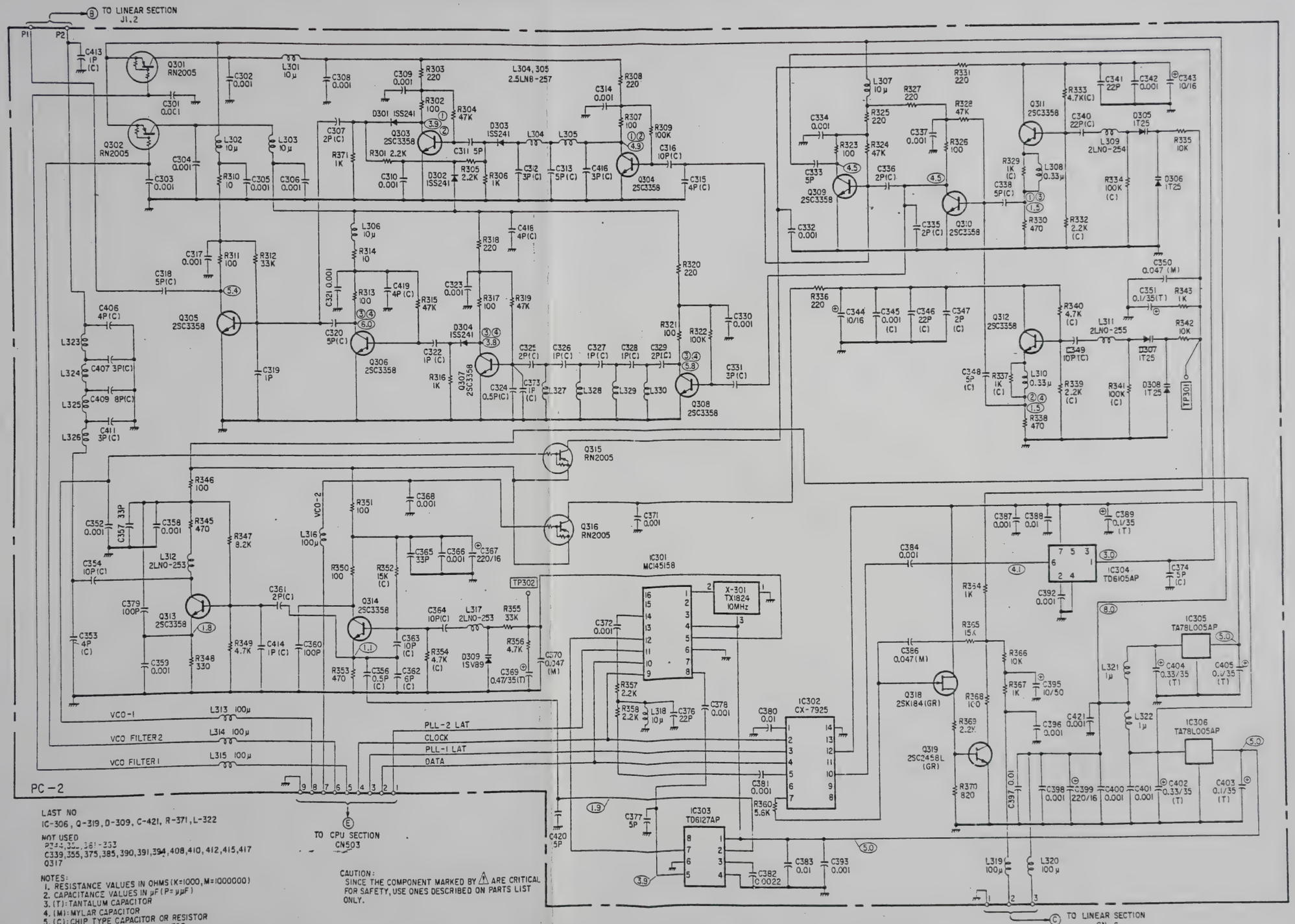
NOT USED
R344,32[illegible],361-333
C339,355,375,385,390,391,394,408,410,412,415,417
Q317

NOTES:
1. RESISTANCE VALUES IN OHMS (K=1000, M=1000000)
2. CAPACITANCE VALUES IN μF (P=μμF)
3. (T): TANTALUM CAPACITOR
4. (M): MYLAR CAPACITOR
5. (C): CHIP TYPE CAPACITOR OR RESISTOR
6. NO SUFFIXED CERAMIC CAPACITOR
7. ◯ DENOTES DC VOLTAGE MEASURED WITH DC VOLTMETER(100KΩ/V) UNDER FOLLOWING CONDITIONS ①25-220.495M, ②220.5-520M ③760-1052.495M, ④1052.5-1300M
8. L323-330 ARE COILS ON P.C.B.

CAUTION:
SINCE THE COMPONENT MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED ON PARTS LIST ONLY.

# SCHEMATIC DIAGRAM (PLL SECTION)

Cat. No. 20-119/9119




LAST NO
IC-306, Q-319, D-309, C-421, R-371, L-322

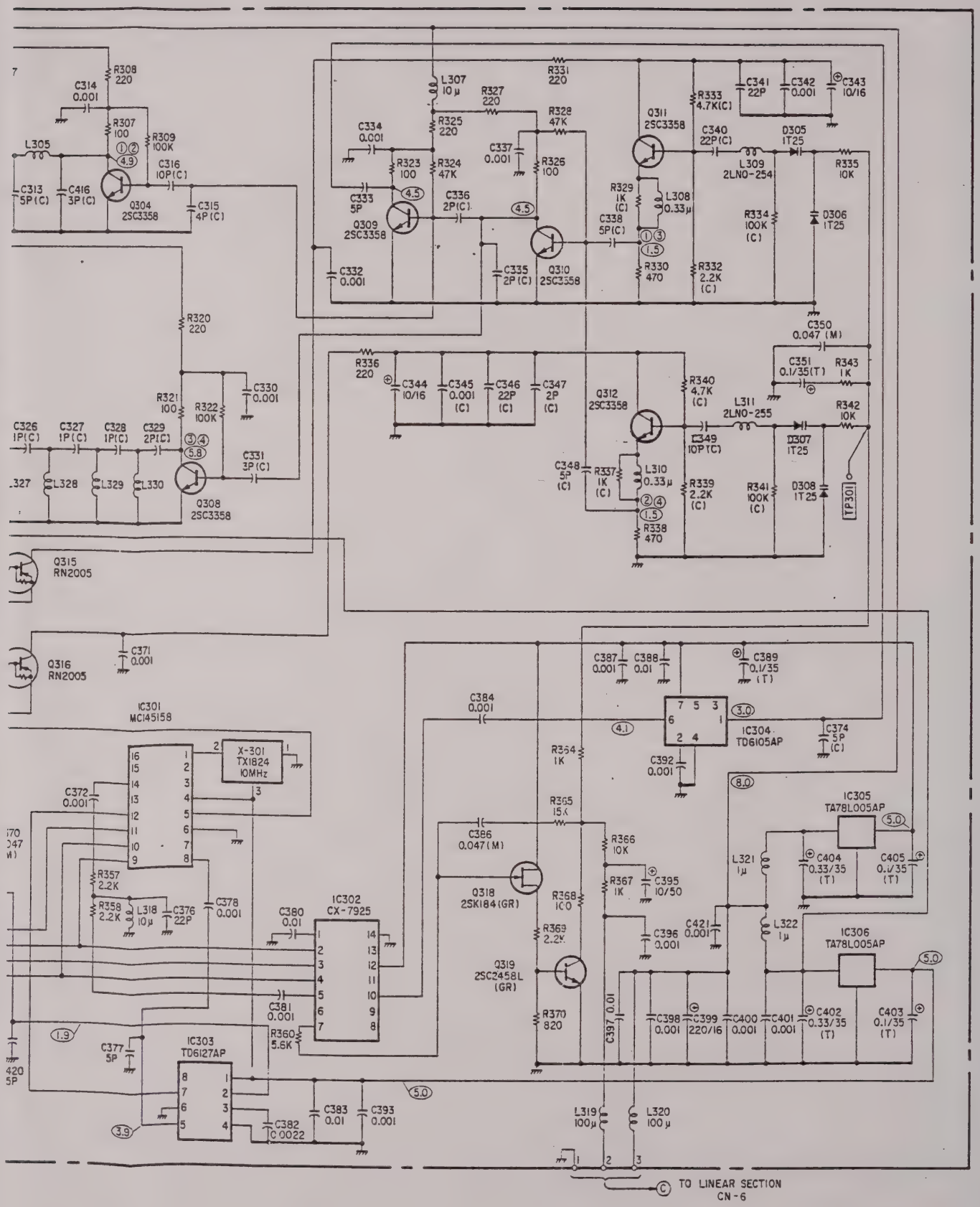
NOT USED
C339,355,375,385,390,391,394,408,410,412,415,417
Q317

NOTES:
1. RESISTANCE VALUES IN OHMS (K=1000, M=1000000)
2. CAPACITANCE VALUES IN µF (P=µµF)
3. (T): TANTALUM CAPACITOR
4. (M): MYLAR CAPACITOR
5. (C): CHIP TYPE CAPACITOR OR RESISTOR
6. NO SUFFIXED CERAMIC CAPACITOR
7. ◯ DENOTES DC VOLTAGE MEASURED WITH DC VOLTMETER(100KΩ/V) UNDER FOLLOWING CONDITIONS ①25-220.495M, ②220.5-520M ③760-1052.495M, ④1052.5-1300M
8. L323-330 ARE COILS ON P.C.B.

CAUTION:
SINCE THE COMPONENT MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED ON PARTS LIST ONLY.

# C DIAGRAM (PLL SECTION)

Cat. No. 20-119/9119



**U.S. PATENT NOS.**

3,794,925
3,801,914
3,961,261
3,962,644
4,027,251
4,092,594
4,123,715
4,245,348

**RADIO SHACK**
**A Division of Tandy Corporation**
**Fort Worth, Texas 76102**

11A6

Printed in Japan

REALISTIC®

# Service Manual

20-119/9119

## PRO-2004
## PROGRAMMABLE SCANNER
## GENERAL COVERAGE
## AM/FM MONITOR RECEIVER

## Catalog Number: 20-119/9119

CUSTOM MANUFACTURED FOR RADIO SHACK, A DIVISION OF TANDY CORPORATION

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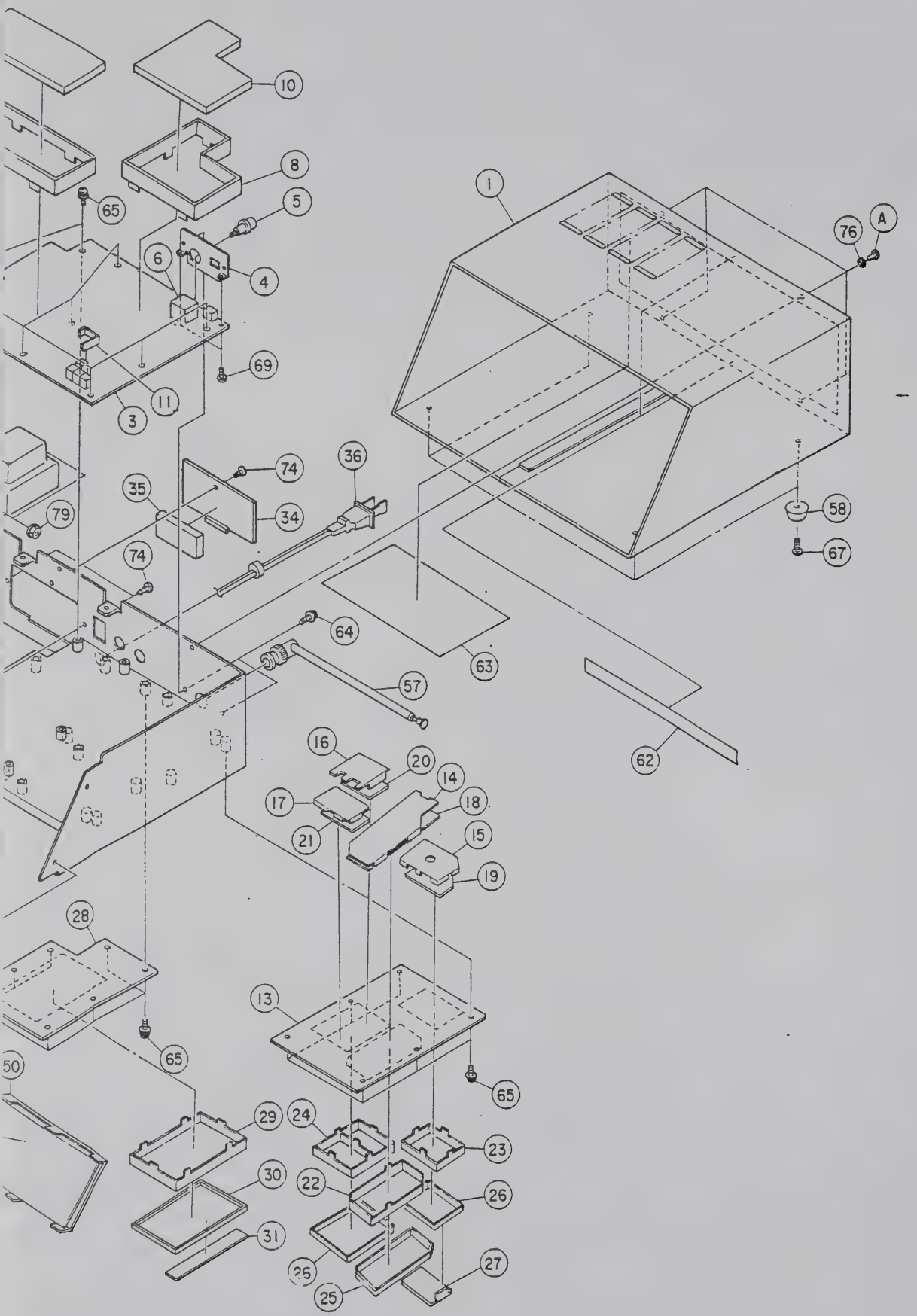
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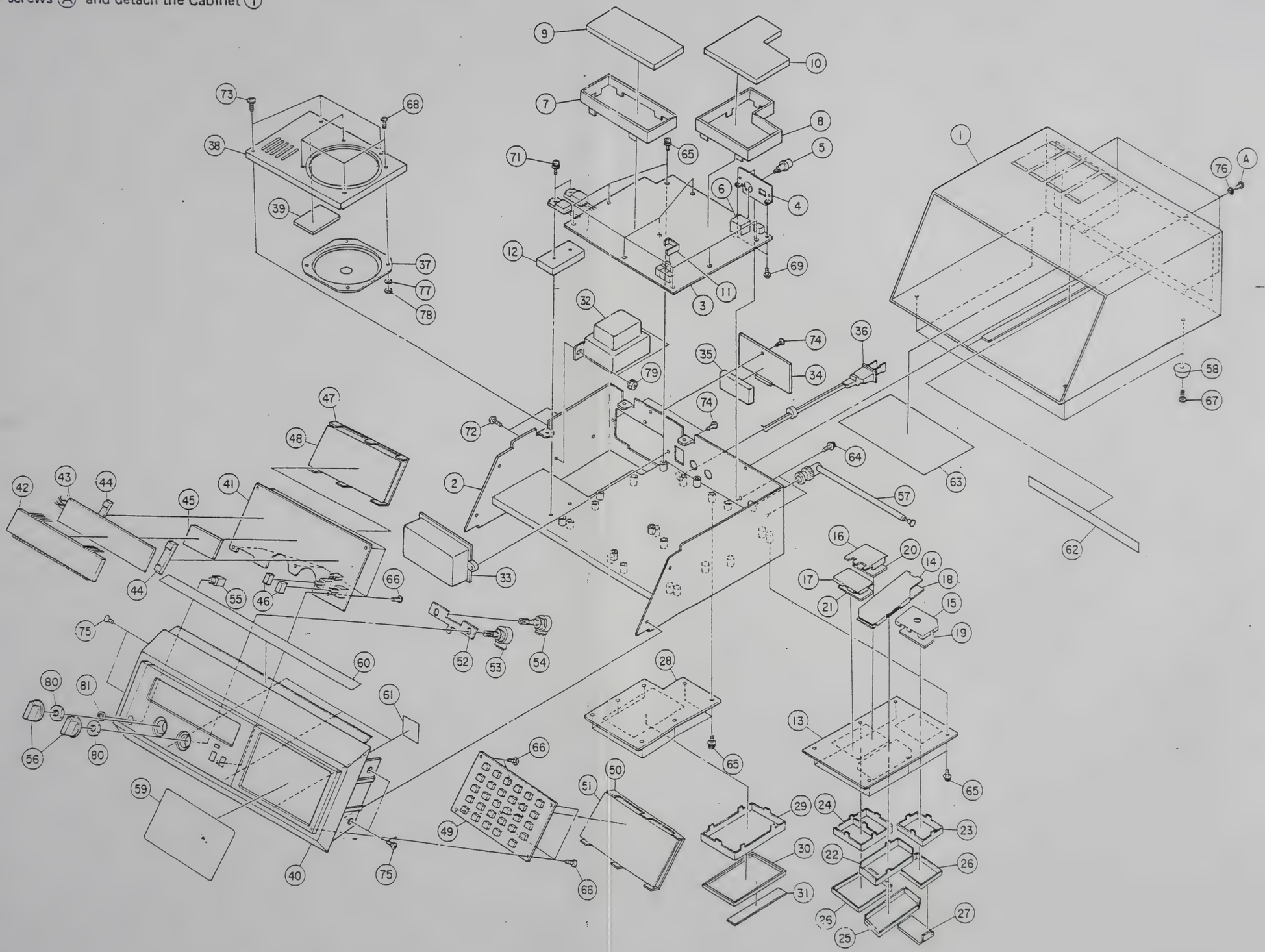
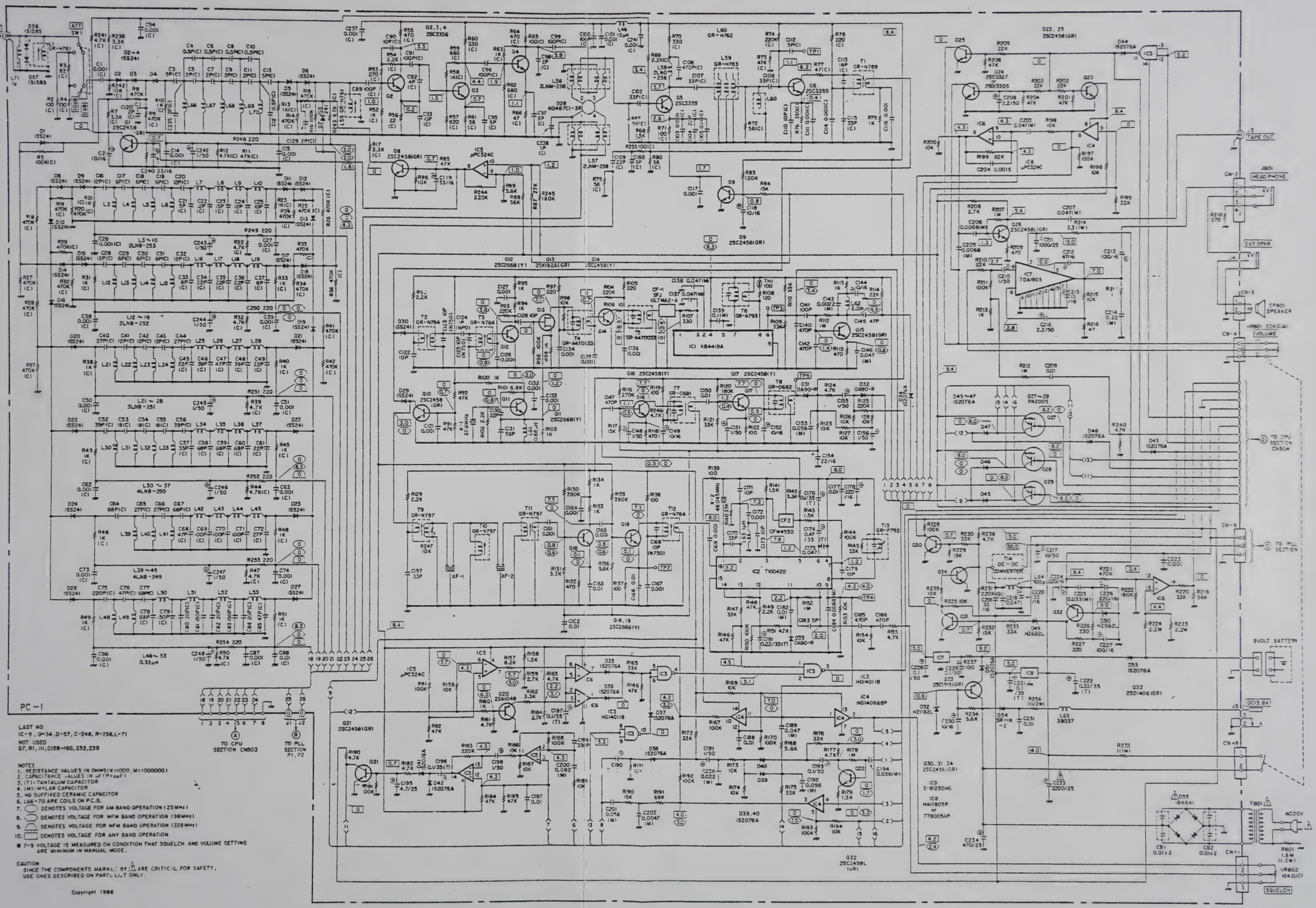
# DISASSEMBLY / EXPLODED VIEW

Remove four screws (A) and detach the Cabinet (1)



# SCHEMATIC DIAGRAM (LINEAR SECTION)

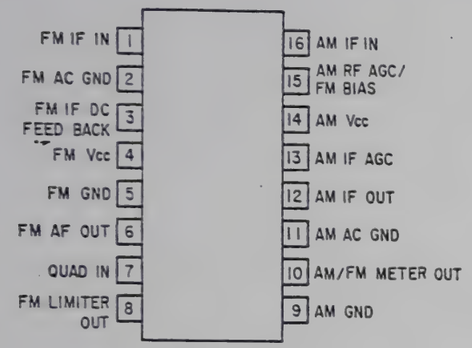
Cat. No. 20-119/9119

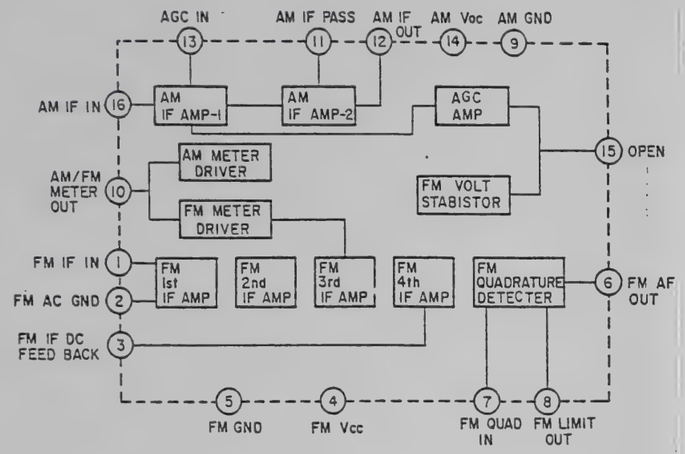


# SEMICONDUCTOR LEAD IDENTIFICATION AND IC CIRCUIT DIAGRAM

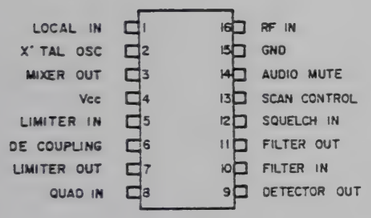
## INTEGRATED CIRCUIT LEAD IDENTIFICATION

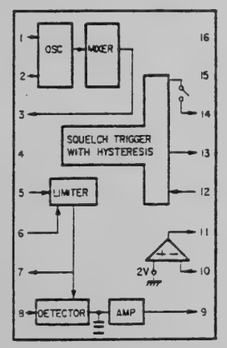
### IC1 KB4419A



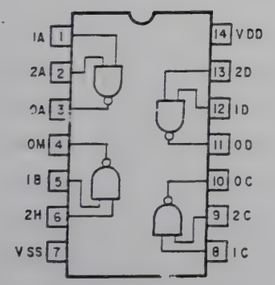



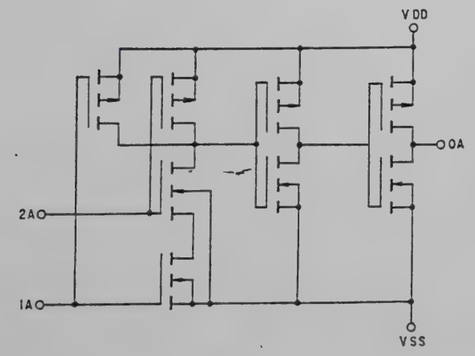

### IC2 TK10420



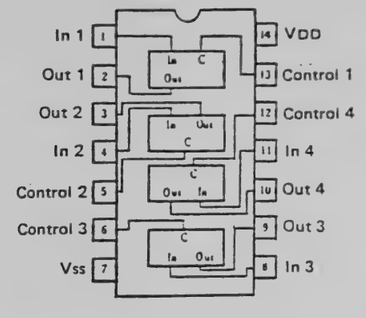

### IC3 HD14011B

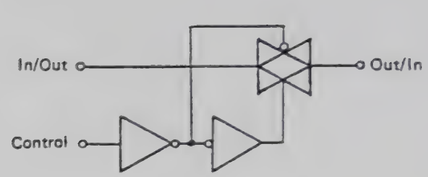


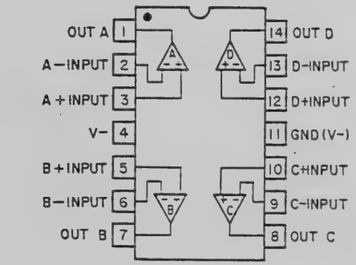


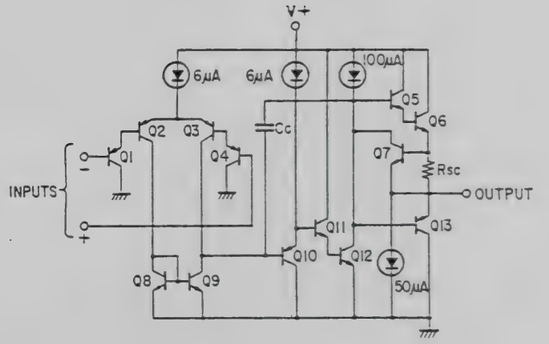

### IC4 HD14066BP



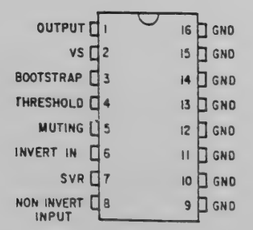



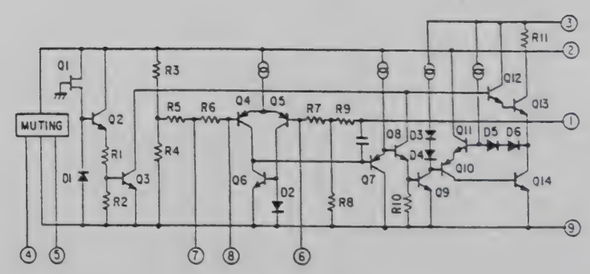

### IC5, 6 μPC324C



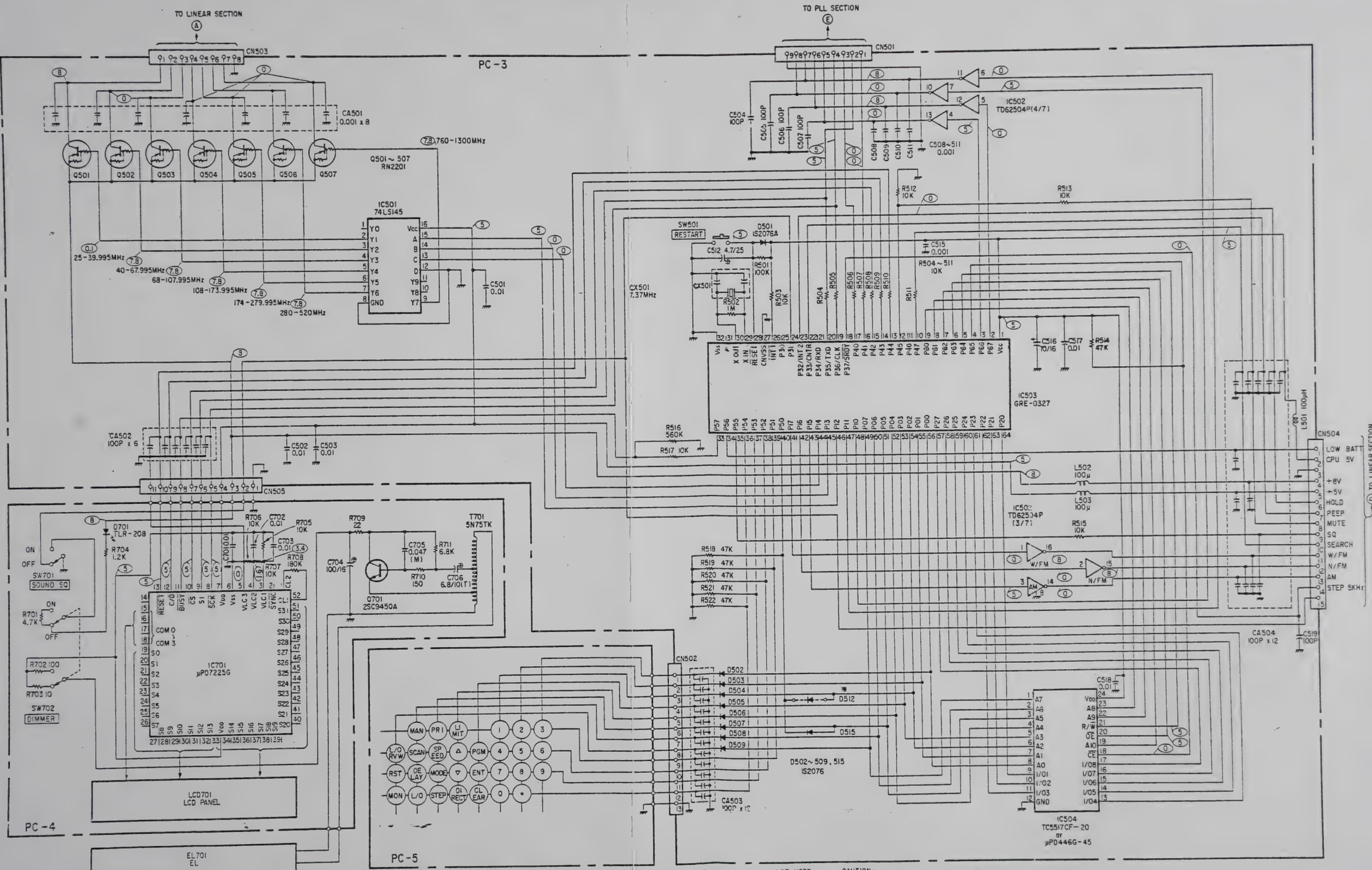

### IC7 TDA1905



# SCHEMATIC DIAGRAM (CPU SECTION)

Cat. No. 20-119/9119




NOTES: 1. RESISTANCE VALUES IN OHMS (K=1000, M=1000000)
2. CAPACITANCE VALUES IN μF (P=μμF)
3. (T): TANTALUM CAPACITOR
4. (M): MYLAR CAPACITOR
5. NO SUFFIXED CERAMIC CAPACITOR
6. ⬭ DENOTES DC VOLTAGE MEASURED WITH DC VOLTMETER (100KΩ/V) UNDER FOLLOWING CONDITIONS CH 1 LOW BAND AT 25MHz AM MANUAL OPERATION. VOLUME AT MINIMUN AND SQUELCH CCW.

LAST NO.

| LOGIC | LCD |
|---|---|
| IC-504 | IC-701 |
| Q-507 | Q-701 |
| D-515 | D-701 |
| C-519 | C-706 |
| R-522 | R-711 |

NOT USED
D510, 511, 513, 514
C513, 514

CAUTION:
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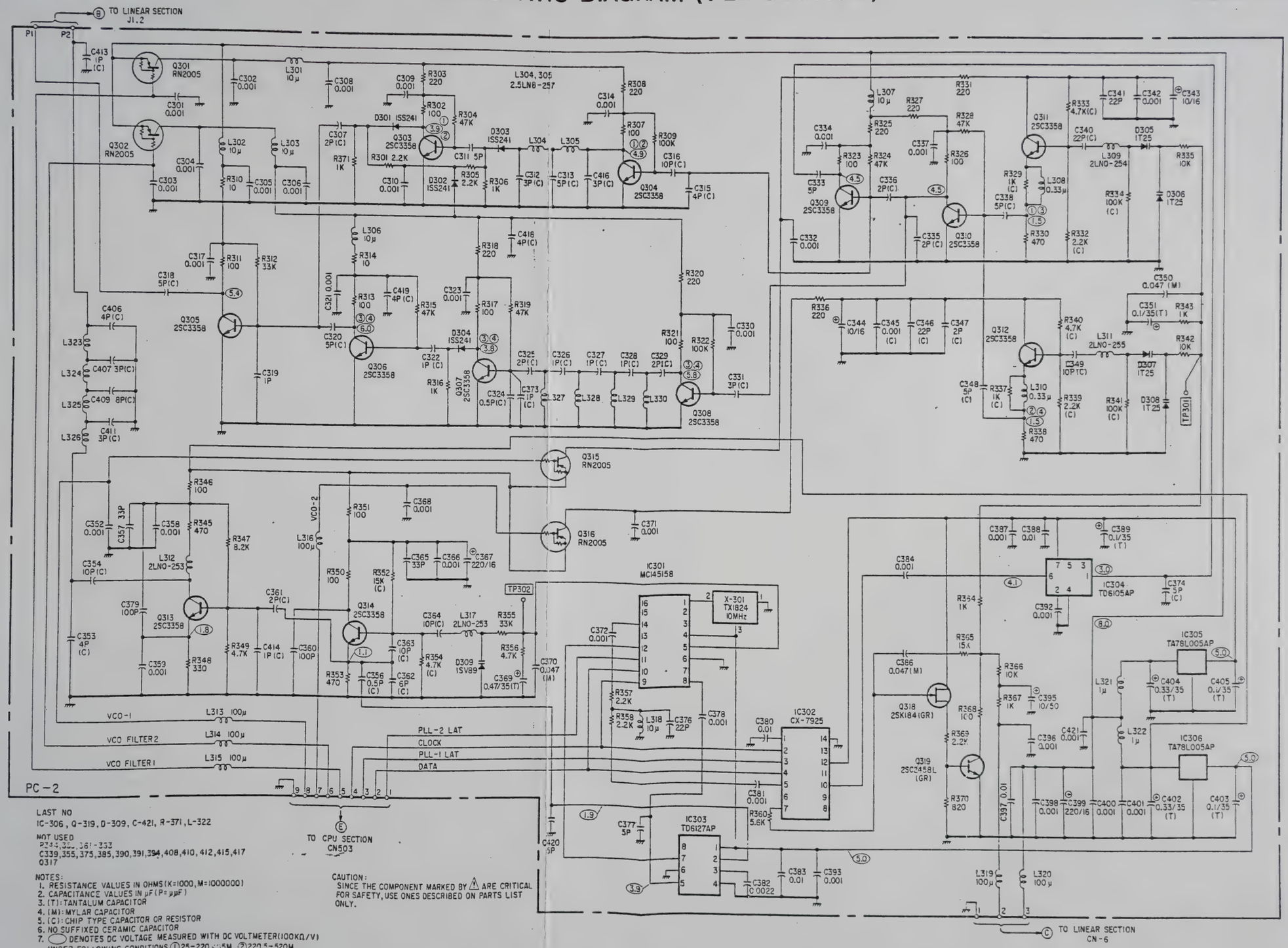
* D512
FOR EUROPEAN/AUSTRALIAN MODELS ONLY

# SCHEMATIC DIAGRAM (PLL SECTION)

Cat. No. 20-119/9119




LAST NO
IC-306, Q-319, D-309, C-421, R-371, L-322

NOT USED
C339,355,375,385,390,391,394,408,410,412,415,417
Q317

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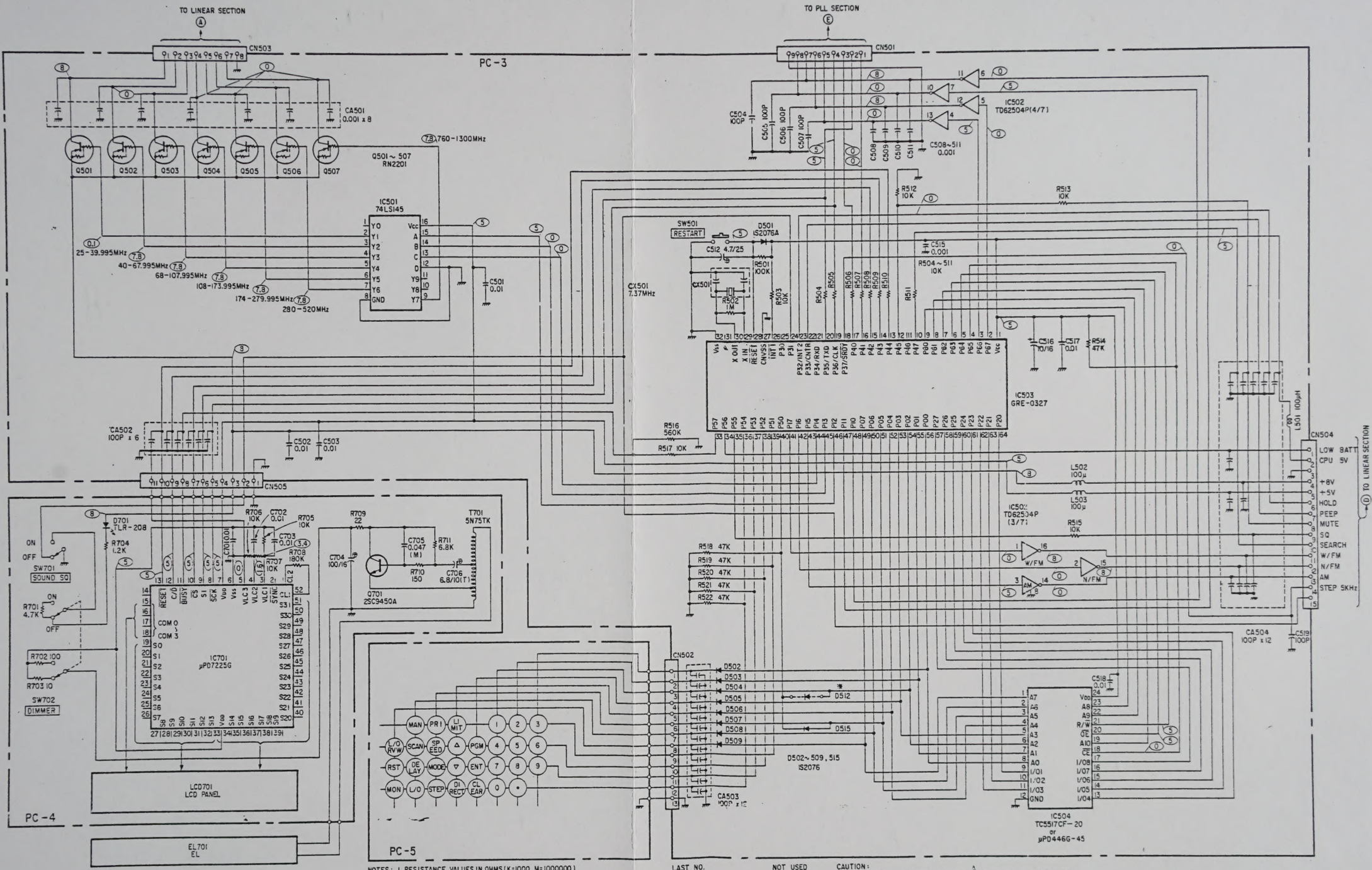


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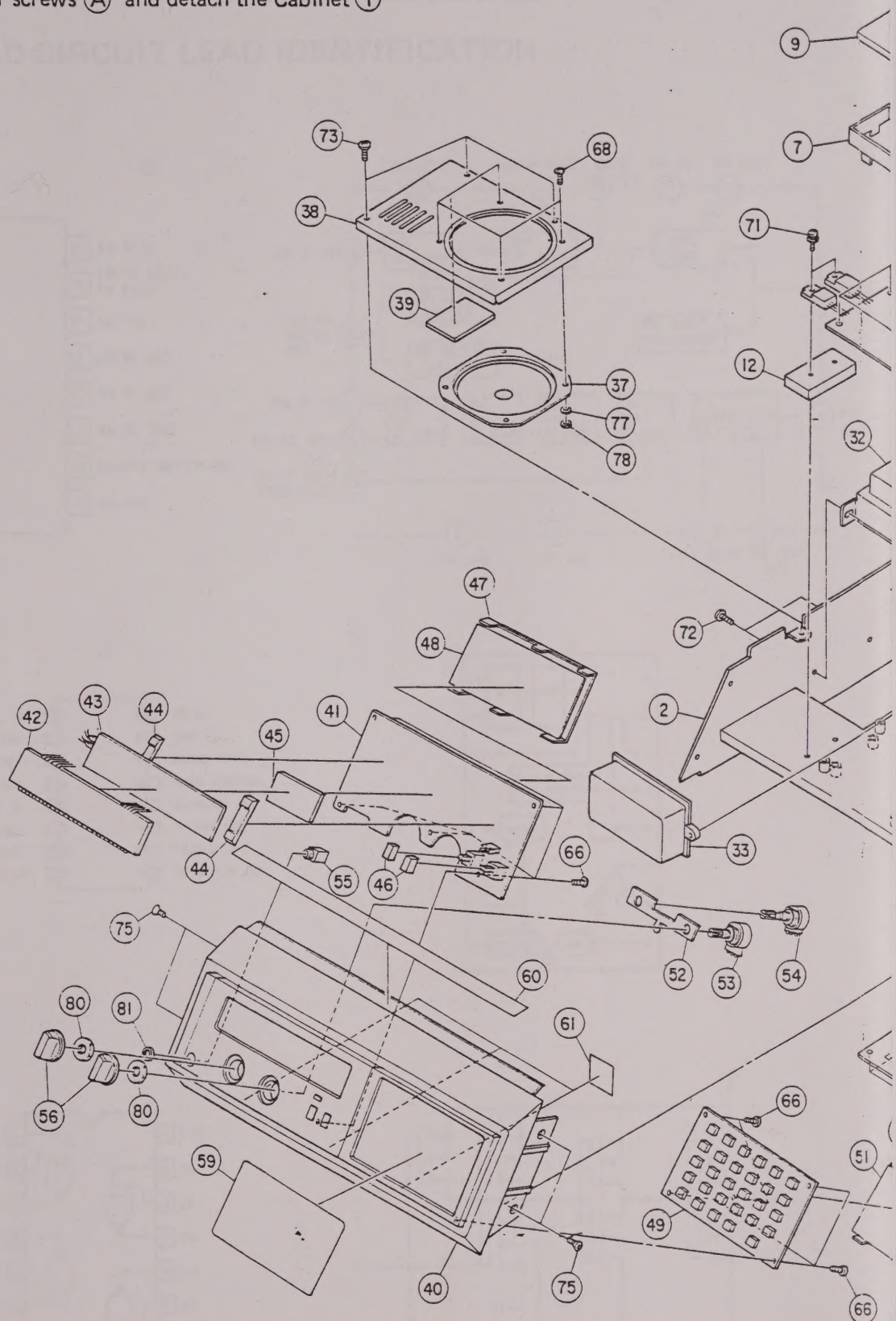

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## GENERAL COVERAGE
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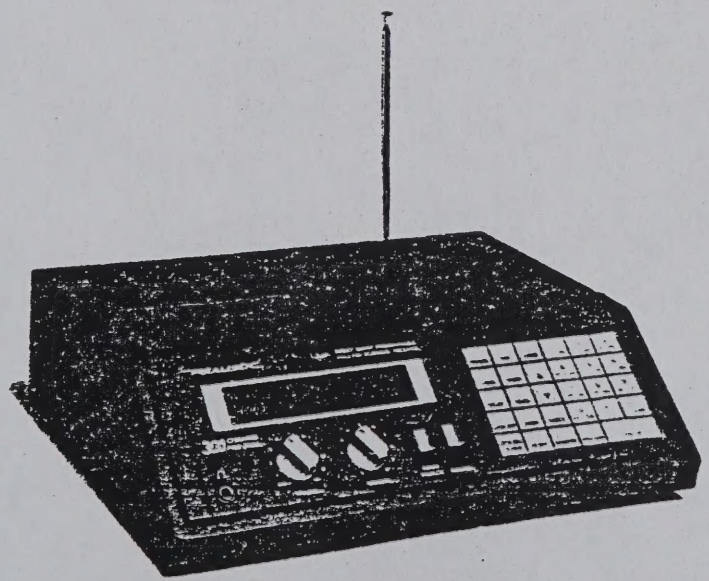

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